

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 606.—Vol. XVII.

LONDON, SATURDAY, APRIL 3, 1847.

[PRICE 6D.]

BLACK-BAND IRONSTONE IN THE WEST OF FIFE.
—FOR SALE, BY PUBLIC AUCTION, at No. 5, St. Andrew's Street, Edinburgh, on Wednesday, the 7th of April, at Two P.M.—UPSET PRICE, £20000.

NORTH STEELEND, SALINE.

(near Oakley, north of Dunfermline), consisting of 116 Imperial acres, chiefly arable, enclosed and subdivided with dwelling-houses and offices suitable, and in good repair. Mr. Williamson, the eminent mining engineer, has ascertained that this estate contains extensive strata of BLACK-BAND IRONSTONE, of superior quality, and unusual thickness, and so situated as to be capable of being extensively worked by open cast.

COAL and LIME are also to be found, and are extensively wrought in the neighbourhood, where also is a ready market from the extensive iron-works existing and projected. Intending offerors are invited to make personal inspection of the trial holes, all left open, and to be exhibited by an experienced miner, engaged for the purpose.

Copies of the engineer's report, with plan of property, to be had on application to David Cornack, accountant, 24, Nelson-street, Edinburgh; Mr. Williamson, mining engineer, 3, Fingal-place, Edinburgh; Henry Barclay, writer, Dunfermline, Jas. Stoddart, miner, in attendance on the ground; or to the subscriber, who has the title.

R. W. JAMESON, W.S.,
67, North-bridge, Edinburgh.

March 26, 1847.

VALUABLE MINING MATERIALS FOR SALE.—To be sold by AUCTION, by Mr. PRYOR, at SOUTH TOWAN MINE, in the Parish of St. Agnes, on Monday, the 12th of April inst., at Eleven o'clock in the forenoon, the following

VALUABLE MINING MATERIALS—viz:
1 70-inch CYLINDER ENGINE, 10 ft. stroke in cylinder, and 7 ft. 6 in. in shaft, with brass condensing work, and about 35 tons of boilers.
1 9-ft. 12-in. pump; 2 9-ft. 11-in. ditto, and several steam pipes.
1 8-in. door-piece; 1 12-in. stuffing-box and gland, brass bushed.
A large quantity of flagstone and other road plates.
15 Rod shivers; 26 4 and 3 ft. whin shivers; 4 pair caps; 1 pair knuckle joints.
20 plunger blocks; 1 pair yokes; 1 smith's crane.
Several thousand bricks; a quantity of iron and ironwork.
1 iron wagon; steam and horse-whim bobbles.
A large quantity of launders, iron slave ladders, miners' chests, new and old timber, and other articles too numerous to mention.

The materials may be viewed on application to the agents on the mine, of whom, and of Mr. Pryor, the auctioneer, all further information may be obtained. The sale will commence at Eleven o'clock precisely.
Dated, South Towan, April 1, 1847.

MINING MATERIALS FOR SALE, BY PUBLIC AUCTION, ON WHEAT ST. CLEER MINE, near LISKEARD, Cornwall, on Tuesday, the 18th April next, the following valuable

MINE MATERIALS.

A single-acting PUMPING STEAM-ENGINE, cylinder 30 inches diameter, 9-foot stroke, equal beam, with 7-ton boiler, cisterns, &c. &c., complete, in excellent condition, being nearly new.

37 9-foot 10-inch pumps
3 9-foot 10-inch matching pieces
6 9-foot 7-inch pumps
1 12-foot 9-inch working barrel
1 10-foot 9-inch ditto
1 12-foot 6-inch ditto
1 3-foot 10-inch clackdoor-piece
1 4-foot 6-inch clackdoor-piece
1 11-foot 11-inch plunger-pole, with case
1 12-foot 9-inch door-piece, and wind-bore to match
1 9-foot 10-inch wind-bore
2 6-foot 7-inch ditto

About 40 fathoms of 8-inch main-rod, and about 10 fathoms of 7-inch ditto; 6 sets of rod-pieces, rod-pins, inches prongs, and hoops.
About 25 fathoms of 12-inch round iron bucket-rods; 10 fathoms of 11-inch ditto.
Iron set-offs, staples and glands, capstan, shears, balance-bob, horse-whim, and shaft tackle, &c.

About 60 fathoms of 12-inch capstan rope; 50 fathoms of 7-inch ditto; 70 fathoms of 54-inch ditto, with a quantity of small ditto.
Two cwts. of 5-inch gasket, 1 cwt. of hemp, 4-inch and 5-inch chain, horse-whim kibble, wine ditto, 26-gallon water-barrel, ladders, air-pipes, launders, cisterns, and a quantity of new and old timber, carpenter's bench, miner's chest, &c.; 2 smith's bellows, 26 and 38-inch; anvil, vice, a set of screws, tap-plates, smith's house, screwing stock, and miner's tools, blower and gad steel, and a quantity of new and old iron, count-house furniture, &c.

For view, apply to Capt. Theophilus Mitchell, on the mine; and for further particulars, to Mr. W. Rendle, the pursuer, 13, Octagon, Plymouth; or Mr. William Murry, auctioneer, Liskeard.

FORTY-TWO INCH CYLINDER ENGINE AND OTHER MINING MATERIALS FOR SALE.—Mr. PRYOR has received instructions to

offer for sale, BY PUBLIC AUCTION, at NORTH DOWNS MINE, in the parish of REDRUTH, on Tuesday, the 12th of April inst., at Eleven o'clock in the forenoon, the following valuable

MINE MATERIALS—viz:
1 42-in. cylinder ENGINE, 9 ft. stroke in shaft, with boiler, about 10 tons
2 horse whims
2 balance bobs
2 pair of blocks
14 12-in. 9-ft. pumps
40 10-in. 9-ft. ditto
22 9-in. 9-ft. ditto
1 13-in. 6-ft. ditto
3 capstans and shears
1 11-in. capstan rope
1 8-in. ditto
70 fathoms of 12-in. rods
70 fathoms of 8-in. ditto
150 fathoms of horizontal rods 2-in. round iron
60 fathoms ditto, 14 in.
60 fathoms of 4-in. pump rods
13 pair of 6-in. rod plates
4 pair of 7-in. ditto
16 pair of 5-in. ditto
2 winches, staples and glands, acar and barrel pins, new and old wrought iron, ditto cast-iron, chain, bucket brasses, prongs, three smith's hammers, three pair of yokes, 40 lbs. of engine-shaft ladders, junk, old kibble, and pulleys of various sizes.
To view the above materials, apply to the agents on the mine; and for any further information to the Auctioneer.—Dated Cornford, April 1, 1847.

A VERY IMPORTANT INVESTMENT—SOUTH STAFFORDSHIRE.

MINES OF COAL, IRONSTONE, AND LIMESTONE, at BENTLEY, between WOLVERHAMPTON and WALSALL.
TO BE LET, and may be ENTERED UPON and SET TO WORK IMMEDIATELY, the

BENTLEY IRON-WORKS, AND MINES OF COAL, IRONSTONE, LIMESTONE, SAND, AND FIRE-CLAY.
The IRON-WORKS consist of FOUR BLAST-FURNACES, with TWO BLAST-ENGINES, with all the necessary apparatus for heating the blast, upon the most improved principle; a large and extensive FOUNDRY, with powerful cranes, pipe pits, stoves, air-furnaces, &c., with smiths' shops, pattern-makers' shops, HIGH-PRESSURE ENGINE, for working a boring-mill, lathe, &c.

Together with the MINES OF COAL, IRONSTONE, LIMESTONE, SAND, AND FIRE-CLAY, and RED BRICK CLAY; lying under about 500 acres of land—all in a ring fence, without any intermediate property, and adjoining the blast-furnaces, upon which is now erected a large and valuable water, or mine, engine, of sufficient power to drain the whole of the mines. Also, FIVE WINDING-ENGINES, with numerous shafts sunk down to the various mines, which consist of—

Coal.

THE HEATHEN

THE THREE-FEET

THE FIVE-FEET

THE FIRE-CLAY

THE BOTTOM

Ironstone.

THE BINDS

THE BLACK GUBBIN

BROWNSTONE

NEWMEIN

ROUGH HILL, or ROBIN

BOTTOM GUBBIN

BLUEFLATTS

SILVERHEADS

DIAMOND

The limestone, which has been sunk down to and worked in of the same description as that found at Dudley and Walsall, and consists of two beds—one about four yards thick—of first-rate quality, for the use of iron-works; and the other about 10 yards thick, also well adapted for iron-works, building, or agricultural purposes. The fire-clay has been proved to be of equal quality with that of Staffordshire.

The mines of ironstone, called the "Binds," and "Bottom Gubbin," are too well known, by parties acquainted with the neighbourhood, to require comment.

The mine of ironstone, called the "Brownstone," is identical with the black-band of Scotland, which has been one of the principal means of raising the iron trade there in its now high position; and, with a limited exception, is not found in the South Staffordshire district, except in the Bentley estate, and is now being conveyed several miles to the least fortunate parts of the district to be smelted.

The mines of coal are of that nature which well adapt them for the use of iron-works, either in the blast-furnace, foundry, or forge.

All the mines of coal and ironstone are now being worked, either upon the other parts of the Bentley estate, or in the immediate neighbourhood, and can be viewed at any time. The property is well provided with canal and railway communication. The Anson Branch of the Birmingham Canal commences within a few yards of the blast-furnaces. The Wyrley and Essington Canal, and the London and North-Western Railway, pass over the estate.

The iron trade being very prosperous, with every probability of remaining so for many years, parties wishing to embark in it have an opportunity here which is very seldom met with. The works may be entered upon immediately and put into operation, without having to contend with all the tediousness which always, more or less, accompanies new undertakings.

It is a well-known fact, that there are but few tracts of valuable coal and ironstone

property now to be met with in South Staffordshire, and several of the first ironmasters of the district have availed themselves of an opportunity of taking several large tracts of similar mines from the Bentley estate, and are now at work upon them.

A plan of the property, and sections of the mines, may be seen, and any further information obtained, by application to Messrs. Vizard and Leman, solicitors, Lincoln's Inn-fields, London; Messrs. White, Broughton, and White, solicitors, 12, Great Marlborough-street, London; Messrs. Ingley, Wharfe, and Cope, solicitors, Birmingham; Harvey Wyatt, Esq., Acton-hill, near Stafford; and Mr. James George, mine surveyor, Bentley, near Walsall, Staffordshire.

ONE LARGE PUMPING-ENGINE.—TO BE SOLD, BY PRIVATE CONTRACT, at GODOLPHIN MINES, Helston, Cornwall, one 80-inch pumping-engine, 10 feet stroke in the cylinder, and 8 feet in the shaft, with three tubular boilers of about 35 tons, a balance-bob and top-piece of rod to each. This excellent engine was erected by one of the first engineers in the county; the air-pumps are lined with brass, and the whole of the machinery possesses great strength and durability. It has done a "duty" equal to the first in Cornwall, and is well worth the attention of any gentleman or company requiring such a powerful machine. The engine will be sold with or without the boilers, balance-bobs, &c., as may best suit the purchasers.

Application to be made to Capt. R. Williams, on the mines.
Dated Godolphin Mines, Helston, Cornwall, February 25, 1846.

DEVON.—TO BE LET, on liberal and most advantageous terms, a MANGANESE MINE. The manganese is of first-rate quality; a course of LEAD runs through a part of the sett, which has never been worked, and there are strong indications of COFFEE. The ground is of an favourable nature, that no steam-engine will be required, as all the water may be taken off by level.

Also, TO BE LET, OR SOLD, a COAL-FIELD, containing about ONE HUNDRED and FIFTY ACRES, of excellent quality unworked coal, situate in Dean Forest, adjoining the Gloucester and Dean Forest Railway.

Apply to Mr. Tripp, sharebroker and mine agent, 12 and 13, High-street, Exeter, who has ON SALE, SHARES in the Dartmoor Consols Tin Mining Company, Bristol Water-Works, Great Western, Bristol and Exeter, and North Western Railway Debentures, &c. Exeter, March 26, 1847.

STEAM COAL.—PARTNER WANTED IN WINNING a COAL-FIELD, in NORTHUMBERLAND, comprising upwards of TWO THOUSAND ACRES of first-rate STEAM COAL, similar to the "West Hartley."

Apply to Mr. Francis Turner, colliery viewer, 2, Regent-terrace, Newcastle-on-Tyne.

CAMBRIAN ANTHRACITE IRON COMPANY. (PROVISIONALLY REGISTERED.)

Capital £200,000, in 20,000 shares, of £10 each.—Deposit 1s. per share, pursuant to

On formation of the company, a call of £1 per share to be made—the remainder (if necessary) in instalments, not exceeding 10s. per share.

It is proposed to apply for an Act of Incorporation for various powers, and to limit the liability of the shareholders.

An agreement has been entered into for the leasing of considerable mines in the western portion of the South Wales Mineral Basin, together with the machinery, steam-engine, railway, tram, canal barges, &c., at a very reasonable rate. The public are invited to inspect the maps and sections of the mines, and the estimates and calculations of working the same, at the office of Mr. Towns, solicitor, 24, Laurence Pountney-lane, City, where applications for shares may be made, and further information obtained.

GEORGIA TIN MINES, divided into 2048 shares, and worked ON THE COST-BOOK SYSTEM.

The necessary arrangements having been made for carrying out the operations of the company, all future communications are requested to be addressed to the offices of the company, 21, THROGMORTON-STREET, LONDON, where the specimens and plans, with the correspondence, may be seen.

ESGAIR-Y-MWYN MINE COMPANY.

Capital £25,000, in 2500 shares, of £10 each.—Deposit £5 per share. (ESTABLISHED ON THE COST-BOOK PRINCIPLE.)

This company is formed for working the celebrated LEAD MINE, called ESGAIR-Y-MWYN, which has been one of the most productive and profitable ever discovered in CARDIGANSHIRE—a county famed in the mining annals of Wales. This property is held under the Crown, by lease, from Her Majesty's Commissioners of Woods and Forests.

The immense profits which this mine has produced, at a trifling cost, would appear incredible; but that the authenticated accounts can be seen at the office.

Resolved,—That the reports and accounts, of all of whom occur in opinion, that, with a moderate outlay, it is certain to produce greater profits than ever.

The full prospectus, with all the reports, maps, &c., the terms upon which the mine and machinery have been purchased, and all other information, will be afforded by the secretary, Mr. HIAW, at the CROWN MINES OFFICE, 84, Basinghall-street, to whom all applications for shares must be addressed; and copies of the prospectus may be had, on application to Mr. Henry English, mining engineer, 26, Fleet-street, who will afford information as to the mine, and the prospects presented.

ESGAIR-Y-MWYN MINE COMPANY.—NO FURTHER APPLICATIONS FOR SHARES in this company will be RECEIVED after MONDAY, the 5th of April.

CALLINGTON MINES COMPANY.—The Annual Meeting of shareholders was held at the offices of the company, No. 44, Finsbury-square, London, on Friday, the 19th of March.

RICHARD HODGSON, Esq., in the chair.
After the reading of the reports of the directors and mine agents, the following resolutions were passed:—

Proposed by Mr. G. Mackay, seconded by Mr. R. James, and carried unanimously, Resolved,—That the reports and accounts, now read, be received, adopted, and entered in the cost and transfer book.

Proposed by Mr. W. James, seconded by Mr. John Matthey, and carried unanimously, Resolved,—That Mr. Field, Jun., Esq., be re-elected a director of this company.

Proposed by Mr. W. James, seconded by Mr. R. James, and carried unanimously, Resolved,—That Messrs. Hammond and Leary be elected the auditors for the current year.

Proposed by Mr. R. James, seconded by Mr. G. Mackay, and carried unanimously, Resolved,—That the very best thanks of this meeting be given to the chairman and directors, for their careful management of the company's affairs, and the efficient manner in which they have discharged the duties of their office.

RICHARD HODGSON, Chairman.
LAMHEROEE WHEAL MARIA MINING COMPANY.—At a Special General Meeting of the adventurers, or shareholders, in Lamheroee Wheal Maria Mining Company, held in pursuance of advertisement, and notice by circular, under date the 18th day of March, 1847, at 4, King-street, Cheapside, London, on Tuesday, the 30th of March, 1847.

JOHN SUNLEY, Esq., in the chair.
The copy of the Bond of Indemnity to Messrs. Edwards and Snell, as lessees in this mine, against the covenants, &c., in the lease, having been read—

It was moved by Mr. Addis, and seconded by Mr. Pegg, That this meeting having heard the draft of the Bond of Indemnity read by the chairman, it was considered that the same should be submitted to Mr. Richard Sergeant, of Norfolk-street, Strand, for his perusal and approval, on behalf of the company; and to Mr. J. E. Fox, of 40, Finsbury-circus, on behalf of Mr. G. W. Snell and the lessees of the mine; and that this meeting do hereby authorise the finance committee to execute such a Bond of Indemnity on behalf of the company, on its approval as aforesaid—the same to be done and executed within four weeks from the date hereof.—Carried unanimously.

The resignation of Mr. G. W. Snell, as the pursuer, having been read and received—

It was moved by Mr. Addis, and seconded by Mr. William Pegg, That Mr. Samuel Benny Sergeant, of Callington, be appointed the pursuer of this mine, in the room of Mr. G. W. Snell, resigned.—Carried unanimously.

JOHN SUNLEY, Chairman.
It was moved by Mr. Addis, and seconded by Mr. R. Sergeant, That the thanks of this meeting be given to the chairman, for his able conduct in the chair.

WHEAL CONCORD MINING COMPANY.—At a Meeting of the shareholders, or adventurers, in Wheal Concord Mine, held at 4, King-street, Cheapside, London, in pursuance of Notice, bearing date the 12th day of March, 1847, at Three o'clock in the afternoon, for the purpose of making a further call, and on other business.

JOHNATHAN PICKERING, Esq., in the chair.
It was proposed by Mr. John Hays, and seconded by Mr. Weekes, That the calls of 10s. due 1st January, 1847, and 10s. due 27th February, 1847, be re-called; and that a call of 10s. per share be now made, in lieu thereof, to be paid forthwith into the hands of the bankers of the company, the London and Westminster Bank (Southwark Branch), London; and that notice of the same be given to each shareholder by the pursuer.—Carried unanimously.

It was proposed by Mr. John Hays, and seconded by Mr. English, That a call of 10s. per share be now made, to be paid into the hands of the bankers of the company, the London and Westminster Bank (Southwark Branch), London, on or before the 28th day of April next; and that the pursuer give notice of the same to each shareholder.—Carried unanimously.

It was proposed by Mr. Weekes, and seconded by Mr. Hays, That the pursuer be instructed to enforce the immediate payment of all calls now in arrear; and that such proceedings be taken against each individual shareholder now in arrear, as may be deemed expedient; and that this meeting do hereby indemnify him from the costs he may incur in taking such proceedings—such arrears of calls, when recovered, to be paid into the hands of the bankers of the company.—Carried unanimously.

JOHNATHAN PICKERING, Chairman.
A vote of thanks was unanimously carried to the chairman, for his able conduct in the chair.

FOR SALE.—FIVE (128ths) SHARES in LELANT CON-SOLS MINE, adjoining sets with the Wheal Margaret, in the parish of Uny-Lelant.—Price £35 per share.—Apply to Captain Thomas Richards, Marazion.

TO MINERAL ENGINEERS.—WANTED, a thoroughly experienced, practical, and responsible person, as MINING ENGINEER and MANAGER of a valuable and very extensive COAL-FIELD in SOUTH WALES, whose testimonials will bear the strictest investigation.—Application, with full particulars and testimonials, addressed "A. B.," to be sent to the office of the Mining Journal, 26, Fleet-street, London, on or before the 20th of April next.—March 30, 1847.

MILLWRIGHT WANTED, in a LEAD ROLLING and PIPE MANUFACTORY—a man, in the above capacity, capable of doing all needful REPAIRS to the STEAM-ENGINE and MACHINERY. Good wages are given, and satisfactory testimonials, as to ability and character, will be required.—Apply to Mr. Wardley, at the Lead and Shot Works, Belvidere-road, Lambeth.

A PERSON, having had several years' experience in the ERECTION of ROLLING-MILLS, for bar-iron and tin-plates, by steam and water-power, and possessing a thorough knowledge of the theoretical and practical part of the manufacture, from the first process down to the tin-plate, is wished for a SITUATION in the ABOVE LINE. Most satisfactory testimonials can be produced, and no objection to the continent.—Address (post-paid) "J. R.," Post-office, Pontypool.

WANTED, by an experienced Copper Smelter, an appointment as AGENT for a COPPER COMPANY, to proceed to Chili, Valparaiso, Australia, or the United States; he is thoroughly acquainted with the entire process of smelting—from the selecting and dressing ores in the rough, to the production of refined copper; has been for many years engaged in one of the principal copper establishments in Wales, and can be most satisfactorily recommended.—Address to "A. B.," care of Mr. William Edmonds, Castle-street, Swansea.

PIG-IRON.—JAMES BANKS and CO. have always FOR SALE SCOTCH FIG-IRON, deliverable, free on board, at the Broomfield, Port-Dundas, Ardrossan, and in the Frith of Forth, at Charleston.

WILSON & FRASER, 2, WELLINGTON-BUILDINGS, LIVERPOOL, and 13, EXCHANGE-PLACE, GLASGOW, have always ON SALE FIG-IRON, BAR-IRON, RAILWAY CHAIRS, and RAILWAY BARS.

MESSRS. J. PAINTER and CO., SHAREBROKERS, MINING AND GENERAL AGENTS, 25, CASTLE-STREET, LIVERPOOL, AFFORD EVERY INFORMATION as to the STATE of the MARKETS, PRICES upon application.

MESSRS. R. CLARK & CO. beg to acquaint their friends and the public in general, that they have taken OFFICES as below, where they intend to carry on BUSINESS as STOCK, SHARE, and MINING AGENTS; relying with confidence upon the method adopted by them for conducting all business entrusted to their agency, Messrs. R. C. & Co. solicit a continuance of that support it will be, by strictest attention to all orders, their endeavour to deserve.

N.B.—Money advanced upon scrip and other securities.
8, Austinfriars, Broad-street, Oct. 17, 1846.

WILLIAM H. SMITH, MINING SHARE AGENT, 10, WARFORD-COURT, THROGMORTON-STREET, has SHARES FOR SALE in the following MINES—viz:—

WHEAL LOUISA, ALBERT CONSOLS,
WHEAL BLENCOWE, WEST SHEPHERD,
WHEAL MARY PENTUAN, VICTORIA TIN MINING COMPANY.
* Every information will be afforded on application.

MESSRS. LINTHORNE, JONES, and CO., STOCK, MINING, and SHARE AGENTS, * Every information will be afforded as to the markets and prices of the above, by application (post-paid) at their offices, 43, THREADNEEDLE-STREET, LONDON.

THOMAS P. THOMAS, MINE AGENT, AND DEALER IN RAILWAY AND OTHER SHARES, 18, THREADNEEDLE-STREET, LONDON.

MINING OFFICES, 1, ST. MICHAEL'S-ALLEY, CORNHILL, LONDON.
WATSON and CUELL, MINE AGENTS.—N.B.—STATISTICAL INFORMATION furnished (on application) to SHAREHOLDERS in MINES in Cornwall, Devon, Scotland, Ireland, Wales, and Spain.

MR. R. TREDINNICK, MINING AGENT AND DEALER IN EVERY DESCRIPTION OF SHARES, THREE KING'S COURT, LOMBARD-STREET, LONDON.

MR. I. A. JOSEPH, STOCK, SHARE, AND GENERAL MINING AGENT, 7, BANK CHAMBERS, LONDON. N.B.—A few SHARES in the TOL PETHERWIN MINE FOR SALE.—PURCHASER of ALFRED CONSOLS and WHEAL MARIA (Hayle).

JONATHAN DAVEY, MINE AGENT, SURVEYOR, AND SHAREBROKER, MATTHEW-STREET, TAVERSTOCK. Mines surveyed, inspected, and reported on, at the shortest notice; plans, sections, and dialling performed, by day or contract.

JAMES LANE, MINING SHARE DEALER, 75, OLD BROAD-STREET, LONDON.

BAROSSA RANGE MINING COMPANY.—THE ANNUAL GENERAL MEETING of proprietors of this company will be HELD at No. 13, Bedford-row, London, on Tuesday, the 6th day of April next, at Twelve o'clock precisely. London, 13, Bedford-row, March 29. CODE, BROWNE, & CO., Secretaries.

COMBARTIN and NORTH DEVON LEAD & SILVER MINING COMPANY.—At a Meeting of the directors of the above company, held on the 16th day of March inst., it was resolved,—That the call, made on the 4th day of December, 1846, not having been paid upon the following shares—viz., Nos. 74, 75, 84, 85, 241, and 242, five share scrips—the same be declared FORFEITED.

By order of the directors,
Dated Combartin Mine, March 29, 1847. C. E. WEBB, Secretary.

IMPERIAL BRAZILIAN MINING ASSOCIATION. Winchester-house, Broad-street, London, April 1, 1847.—The TRANSFER BOOKS will CLOSE on the 15th inst., and re-open on the day after the general meeting in May of which due notice will be given. GEORGE THOMAS, Acting Director.

NATIONAL BRAZILIAN MINING ASSOCIATION.—In order to accomplish the purpose stated in the report, read at the meeting of the 8th inst., parties holding UNMARKED SHARES are requested to SEND their NAMES and ADDRESSES, together with the NUMBERS of their SHARES, to this office, under cover to the directors, on or before Saturday, the 10th of April proximo.

36, Throgmorton-street, March 29, 1847. R. IRELAND, Secretary.

MARKE VALLEY CONSOLIDATED COPPER AND TIN MINING COMPANY.—THE ANNUAL GENERAL MEETING of the proprietors of the above company will be HELD at the White Hart Hotel, Salisbury, on Thursday, the 8th day of April next, at Twelve o'clock at noon precisely. Salisbury, March 26, 1847. JOHN HARDING, Secretary.

SOUTH WHEAL MARIA MINE.—A MEETING of adventurers of SOUTH WHEAL MARIA MINE will be HELD at the mine on Tuesday, the 12th day of April next, at Eleven o'clock A.M., for the purpose of considering the necessary business relative to the working and conducting the affairs of the said mine.

As the shaft will be down to the 30 at that time, I particularly request a full attendance, in order to decide the important question as to whether or not the whole of the first east and west lodes and counter shall be cut at that depth.

JOHN SECCOMBE, Pursuer.
Trevreigh Consolidated Mining Company.

Notice is hereby given, that the MEETING, advertised to take place on Monday, the 5th inst., at One o'clock, is unavoidably POSTPONED until WEDNESDAY, the 7th, at the same hour.

87, Old Broad-street, April 3, 1847. W. NICHOLSON, Secretary.

ASSAYING AND ANALYSIS.—MR. MITCHELL begs to inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of ALL PRODUCTS, metallurgical and manufacturing, at his LABORATORY, 23, HAWLEY-ROAD, KENTISH TOWN, LONDON.

To which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

Labo Intelligence.

HEATH'S IMPROVEMENTS IN MANUFACTURING STEEL.

VICE-CHANCELLOR'S COURT, MARCH 27.

HEATH v. UNWIN.—This case came on upon a motion for an injunction under a notice given in April, 1845. The plaintiff, J. M. Heath, who was the inventor of certain improvements in the manufacture of iron and steel, obtained a patent for the invention in April, 1838. He subsequently brought an action against the defendant for an infringement of his patent. The plaintiff, by his specification, declared the nature of his invention to be, "the use of carburet of manganese in any process whereby iron is converted into cast steel," and described the process thus: "I propose to make an improved quality of cast steel, by introducing into a crucible, bars of common blistered steel, broken as usual into fragments or mixtures of cast and malleable iron and carbonaceous matter, along with from 1 to 3 per cent. of their weight of carburet of manganese, and exposing the crucible to the proper heat for melting the materials, &c.; but I do not claim the use of any such mixture as part of my invention, but only the use of carburet of manganese in any process for the conversion of iron into cast steel." Carburet of manganese is a known metallic substance, compounded of black oxide of manganese and carbon. It appeared upon the trial at law that the defendant, after the date of the patent, in manufacturing steel, put blistered steel into a crucible, together with certain proportions of black oxide of manganese and carbon; and it appeared, from the evidence of the scientific witnesses upon the trial, and the jury found that these substances would become fused at a certain heat, and would combine and form the carburet of manganese before the blistered steel, which would require a much greater heat to fuse it, could be operated upon by them; but it did not appear that this was known to the defendant. The judgment of the court, as delivered by Mr. Baron Parke, was, that the defendant had not directly infringed the plaintiff's patent, for he had never used the substance called carburet of manganese in the mode described in the specification, and that the defendant had not indirectly infringed the patent, because he did not know that the ingredients he had used would produce the same effect as that used by the plaintiff. The plaintiff's motion for an injunction was refused.

Mr. BETHELL and Mr. CHICHESTER, for the plaintiff, contended that the decision of the court of law was contrary to the opinion of the Lord Chancellor, as expressed in "Muntz v. Foster," delivered in November, 1843, and also in a recent case of "Stevens v. Keating;" and that it was evident the opinion of the judges could not be supported when they decided that the defendant had not, either directly or indirectly, infringed the plaintiff's patent. Mr. WALKER and Mr. ROSE contended that the judgment of the court of common law was conclusive, and the bill ought now to be dismissed. The VICE-CHANCELLOR said, the circumstances of this case appeared to him to be quite novel. He did not recollect a similar application having been made, unless the case of "Kay v. Marshall" could be considered as a precedent. He thought that what had been stated as the opinion of the judges when this case was before them, and reported in "13 Meeson and Welsby, 582," was fraught with very dangerous consequences to the rights of persons, because, although he could understand that the animus with which an act was done was of importance to be considered when the question was dependent upon the quality of the act, as regarded a criminal proceeding—for it might be an answer to say, that the act was done without the intention of the party—he could not see how such a doctrine was to be applied to cases of this sort. A person might commit an act unconsciously; but *prima facie* he was liable for the injury he had done. In the recent case of "Stevens v. Keating," respecting the use of borax, the Lord Chancellor had also expressed an opinion that he would not follow the rule laid down by the judges of the Court of Exchequer. Under these circumstances, and having regard to the opinion of the Lord Chancellor, he thought it would be right to retain the bill, without making any order for an injunction, giving the plaintiff leave to bring an action at law, either in the Court of Exchequer or Common Pleas.

LIBEL ON MESSRS. DE TASTET, VIGERS, & CO.

WESTERN CIRCUIT—BODMIN, SATURDAY, MARCH 27.

DE TASTET AND OTHERS v. ROSMAN.—Mr. Cockburn and Mr. Smith were counsel for the plaintiffs; and Mr. Crowder and Mr. Butt for the defendant. The declaration stated that the defendant had published, and of concerning the plaintiffs, a certain false and malicious libel. The defendant had suffered judgment to go by default. The jury were sworn to assess the damages.

The plaintiffs were merchants and mine proprietors, and the defendant had been employed by them as their clerk. In 1846, the plaintiffs stopped their works, and the defendant, having left their employment, caused the following handbill to be printed and circulated:—"W. H. Rosman, late agent under Messrs. De Tastet, merchants and mine proprietors, begs to inform his friends and the public, that in consequence of the failure of the aforesaid firm, he has commenced business as an auctioneer, &c." There was no ground for saying that Messrs. De Tastet had failed; and, therefore, they brought this action to set themselves right with the world, and they had given the defendant an opportunity of proving the correctness of his statement, if he could do so. The defendant, however, had suffered judgment to go by default—thereby admitting that he could not justify, and that there must be a verdict for the plaintiffs; and the jury were now to say to what amount of damages they considered the plaintiffs to be entitled. The handbill had been very extensively circulated by means of the post, as well as being stuck up all over the neighbourhood; and when defendant was told legal proceedings would be adopted, he replied he did not care, he wanted to expose the parties to the utmost of his ability. For the defence, it was urged that it was a most unnecessary proceeding to bring this case into court, instead of taking it before the sheriff, as was usual in all such cases, and that it was a mere view of persecuting the defendant, and putting him to great expense. The word failure had been used by the defendant merely to inform the plaintiffs had ceased to carry on their business, but not with any intention to insinuate that the plaintiffs had become bankrupts or insolvents; still it was admitted that the term defendant had used could not be justified.—The jury assessed the damages at 40s.

ON THE MANUFACTURE OF NITRATE OF COPPER AND OTHER METALLIC NITRATES.—The ordinary mode of preparation of nitrate of copper, intended for dyeing purposes, is by dissolving copper in nitric acid; by this plan an excessive waste ensues, as a great portion of the acid is decomposed into nitric oxide, and evolved in red fumes. To avoid this, I pulverise atomic weights of nitrate of soda, and sulphate of copper, adding a little water; they are then spelt together, their water of crystallisation in addition to that added to the mixture, causing them readily to form a saturated liquid. So soon as the slightest appearance of red fumes is perceived, the composition is to be removed from the fire, and allowed to cool. The mass will then be found to be a mixture of nitrate of copper, and sulphate of soda; the latter may be evaporated by crystallisation. If the nitrate is intended as a mordant for dyeing, this is not necessary, as the latter will be exhausted by the goods, leaving the sulphate of soda nearly pure. The nitrates of iron, zinc, and many other metals, may be prepared in a manner exactly similar—indeed, the process will answer in all cases where the metallic sulphate is soluble; from analogy it would probably answer for the nitrates of alumina and magnesia, but I have not yet tried them.—A FRIEND: *Glasgow Mechanics' Magazine.*

ON WATER AS FUEL.—This seemingly strange idea originated in an occasional remark of Sir H. Davy—that on the problematic exhaustion of coal, men will have recourse to the hydrogen of water as a means of obtaining light and calefaction. As the gas used for lighting consists of hydrogen and a little carbon—it is only the latter which would have to be added, after the water had been decomposed into its elementary parts. M. Jobard, of Brussels, was the first who extracted from water a gas, of twice as great an illuminating power as that obtained from coal. This gentleman produces hydrogen gas by the decomposition of vapour, passing through vertical retorts filled with coke, being in a state of white heat. And at the moment of the hydrogen being thus formed, it is mixed with a little carbonic acid gas, obtained by the distillation of oil, tar, or naphtha, or other coarse substance, hitherto useless in the gas manufactory. In the *Bulletin du Musée d'Industrie*, M. Jobard's method has been amply detailed. He says that at the expense of one pennyworth of oil, a light may be obtained during 20 hours, equalling that of 20 tallow candles. Even conceding that M. Jobard's discovery has not quite attained the object of using water for light, fuel, &c., still it has done something towards it. These ideas lead us to a calculation of Prof. Faraday, that the elements of a single molecule of water contain 800,000 charges of an electric battery, consisting of 8 troughs of 2 in. in height, and 6 in. in circumference. At the amount of these slumbering forces, the human mind is startled; because if we should ever be able to elicit and make the available, the power of the mightiest steam-engines would dwindle to nothing—and thus, ends would be attained by the means of things seemingly trifling and worthless, which cannot now be accomplished by any sacrifice or expense.—J. L.—*Civil Engineer.*

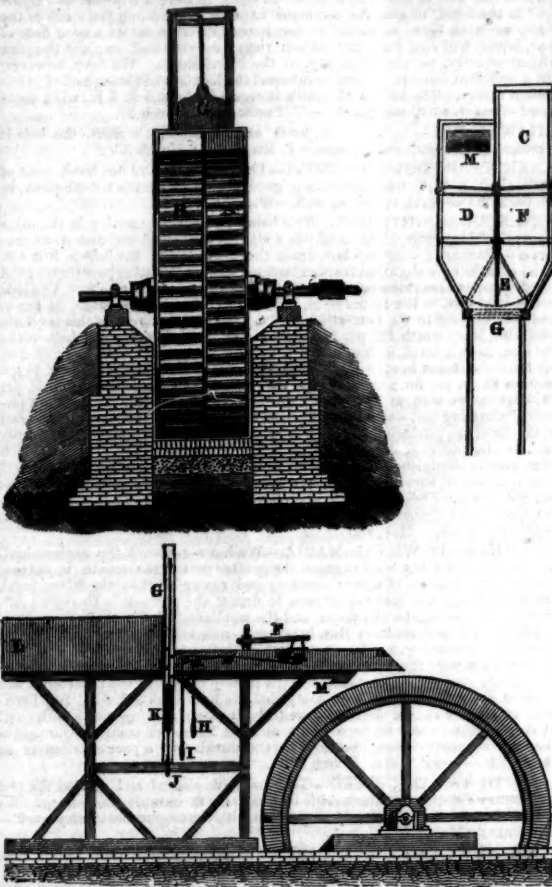
IRON SAUCEPANS WITH WHITE ENAMEL LININGS.—Some time ago a paragraph, copied from some one of the London papers, appeared in our columns, warning parties against the "use of iron saucepans lined with a white enamel." The patentees of these utensils, we find, have proved by long experience, that the caution was quite unnecessary, inasmuch as the utensils are as safe for use as any other metal. They have been analysed at various times by Dr. Ure, Mr. Cooper, and other eminent chemists, and pronounced by them to be perfectly harmless. The paragraph, in all probability, had its unfair origin with some rival in the saucepan trade. We have felt it to be no more than our duty to say thus much on the subject.—*Hampshire Advertiser.*

MONSTER TRAIN ON THE TAFF VALE RAILWAY.—On Thursday, a monster train left the Cardiff Docks, for Navigation House, drawn by the *Abercrombie*, a fine powerful engine, manufactured by Messrs. R. and W. Hawthorn, Newcastle-upon-Tyne. This is the largest engine at present on the Taff Vale Railway, being a six-wheeled coupled engine; wheels, 4 ft. 6 in. in diameter; 18 in. cylinder; and a 2 ft. stroke. The train consisted of 99 waggons, 21 loaded with iron ore, &c., and 78 empty coal-waggons; gross weight of train 365 tons (exclusive of engine and tender); length of train 585 yards. The gradients of the line are very great, there being a rise from the Cardiff Docks to the half-mile post of about 12 ft., the other gradients averaging about 1½ ft. per mile; and the line is one continual rise of gradient throughout to Merthyr. The greatest speed attained was 18 miles an hour. It is worthy of remark, that from the heavy gradients and sharp curves, the engine performed her trip very satisfactorily, having plenty of steam at command during the whole of the journey. We believe this train to be the heaviest, by 60 tons, that has ever been taken up the line; and cannot be otherwise than satisfactory to the directors and company at large, as it fully shows the attention paid to their locomotive power, the most important department in all railways, and also proves the competence of the superintendent, Mr. H. Clements, who was engineer of the *Great Western* and the *Great British* steam-ships.—*Merthyr Guardian.*

The amount collected from the workpeople employed in the iron-works and collieries of Messrs. J. Bagnall and Sons, West Bromwich, and paid over for the relief of the distress in Ireland, was the handsome sum of 250l. 15s. 1d.; which, with the additional donation of 200l. given by Messrs. J. Bagnall and Sons for the same purpose, makes a total sum of 450l. 15s. 1d. remitted for so benevolent an object.

RICHARDSON'S REVERSING WATER-WHEEL.

This wheel is designed for the purpose of raising slate from the Coombe Valley Quarry, and is proposed to do the work of a steam-engine, without its attendant expenses—the chief object being to throw all its available power into direct action, without the intervention of gear-work. Its projector, Mr. Richardson, says, that to cause rotary machinery to reverse, it is usual to introduce bevelled gear—all gear-work creates friction—friction loss of power, waste of time, and money. To save time is the great desideratum in conducting the works of a public company; for if this important point is neglected, the profits expected to be derived can never be realised.



The following description will explain the method of its working:—A and B represent a front elevation of the wheel; the buckets on the side A, are placed in an inverse direction to those on the side B. C, is an overshoot, or water-course, flowing on to B. D, a backshot, conducting the water on to A, which acts in a reverse manner to that of B. E, a reversing gate, hung on a centre, and having a hollow quoin, similar to a common navigation lock-gate. F, a lever, attached to the axle of the gate, E, which, with its connecting pulleys, H and I, is made to turn the water alternately off and on to the overshoot and backshot launders, C and D. G, the stopgate. H, the overshoot pulley. I, the backshot pulley. J, the stopgate pulley, having a graduating plate, K, attached for the purpose of regulating the feed. L, feed-head, or reservoir. M, the water way of backshot, D, when the wheel is set in motion; the lever, F, is pulled over, and the gate, G, raised; the water then flows on to the overshoot section, B. On the signal being given to stop, the gate G is shut down; and the water in the launder, C, is just sufficient to drive the wheel half a revolution, when it stops for want of its propelling power. On the signal being given to start in a reverse direction, the lever, F, is pulled over; and, on the gate, G, being raised, the water flows on to the backshot section, A, and thus alternately. Thus, nearly the whole of the gravitating force of the water is applied in a direct manner, and must save, independent of the cost of construction, and liability of breakage in gear work, a great amount of power, which, where water is scarce, is a considerable advantage.

IMPROVEMENTS IN RAILWAY CONSTRUCTION.

ON A NEW MODE OF CONSTRUCTING RAILWAYS BY THE EMPLOYMENT OF CAST-IRON CHAIRS AND WROUGHT-IRON SLEEPERS.

(Being a report in the name of the Committee of Mechanical Arts, by M. Vanvillers, on Messrs. Besse-Lamézie and Henry's proposed plan for superseding wooden sleepers.) In the early period of railways, the cast-iron chairs for holding the rails were supported by blocks of stone; and, in some instances, on embankments which had not been allowed sufficient time to settle, the chairs were fixed upon wooden sleepers, preparatory to the completion of the embankment. This exception has, however, become the general rule; the stone blocks are seldom used, on account of the difficulty of fixing the chairs, and wooden sleepers are almost universally employed. Longitudinal wooden sleepers have also been proposed, and employed in some instances, but have not been generally adopted. The expense attendant on wooden sleepers is very great, from the continually increasing price and scarcity of wood, and also by reason of its rapid deterioration when buried in sand. It is also very difficult to fix the chairs properly by pins, as they rust and eat away the wood.

Messrs. Besse-Lamézie and Henry have submitted to the Society of Encouragement a plan, in which, instead of the wooden sleepers and cast-iron chairs at present employed, two cast-iron plates are used, 13 in. in length and 15 in. width. The chairs, which are of the ordinary form, are cast in one piece with these plates. The rails are kept at the requisite distance apart by means of a cylindrical wrought-iron rod, about an inch in diameter, which passes through the chairs a little below the rails, and is held fast therein by means of vertical pins, which are prevented from rising by the rails being in immediate contact with them. The plates are prevented from slipping in a longitudinal direction by means of grooves cut in their under side, and this is further assisted by the whole being covered with earth as high as the base of the rails. This improved plan is shown in engraving—fig. 1 being an end elevation of the iron



plate and chair, and fig. 2 a cross section of the same: a is the cast-iron plate, having feathers underneath which indent the ground, and prevent the plates from slipping; b is the chair cast on the plate a, and in it the rail c is fastened by a wooden wedge; d is the cross rod for maintaining the rails at the requisite distance apart, and is, as before stated, fastened to the chairs respectively by vertical pins, e.

The members of the Committee of Mechanical Arts proceeded last summer to inspect those portions of the Versailles Railway where this plan had been adopted; the parts selected were those most calculated to test the merits of the new plan. The extent laid down upon this plan was about 70 yards, and it had been continually traversed since January, 1846. The result of the inspection was very satisfactory, as the whole of this portion of the line appeared in good condition, and the plates and cross-rods were free from rust, although buried 6 in. deep in sand. To make the advantages of this system more evident, it would, however, be desirable to lay down 200 or 300 yards of rail continuously; when the following beneficial results would appear from using the cast-iron plates for sustaining the railway chairs:—Woodwork, which is expensive, and not very durable, would be dispensed with, a saving of about 1s. 6d. per yard would be effected, a less quantity of earth would be required to be displaced when readjusting the chairs, a firmer way would be obtained, and the construction would be much simplified. Wooden sleepers are liable to warp and shrink, and get out of place; and, on a train passing, they will rise,

and thus the rails will become loosened. In some instances, where there is not room for an adequate thickness of ballast upon and near the crown of arches, cross sleepers of iron have been employed in connection with the chairs; but only three or four have been laid together in this manner, as there was no dependence to be placed upon them. The plates proposed by M. M. Henry and Besse-Lamézie offer every security in this respect. Iron sleepers have been used with advantage in the construction of railways employed in smelting-works, for transporting incandescent matters, which would burn the wooden sleepers. Plans analogous to this have been proposed at various times without having been put in practice.—*Bul. Soc. d'Encouragement: Newton's Journal.*

IMPROVEMENTS IN ARTIFICIAL LIGHT.

(Specification of patent granted to R. C. Barleigh, Bath, in the county of Somerset, for certain improvements in artificial light.)—*Newton's London Journal.*

In order that the nature of this invention might be rendered evident, the patentee has given a few preliminary remarks on the nature and properties of solar and artificial light. He states, that in solar light three colours or rays are so combined as to yield in transmission through the azure-coloured medium of the atmosphere, a perfect or colourless light; that is to say, those luminous rays which emanate by radiation from the sun, and reach the earth, consist of three primitive colours, red, yellow, and blue, combined in proportions that form a compound ray, having no predominating tint. Solar light, therefore, or the luminous rays emanating from the sun, being, by composition, the purest and most perfect of any with which we are acquainted, such light must necessarily be the standard of comparison to which every other kind of light is to be referred, in judging of its quality and effects. Now, the difference between the illuminative effects and qualities of solar or natural light, and of that produced by artificial means, will be found to consist principally in this—viz., that in the artificial spectrum, the red and yellow portions or rays greatly predominate over the blue; that is to say, the former are present or emanate from the source of artificial light in quantities over and above such as are required for a just and harmonious combination with the blue rays, to produce a perfectly colourless light, similar to solar light. This excess of red and yellow rays may not only be proved by the prism, but as they appear to emanate in a free or uncombined state, they can be recognised as a positive tint, overlaying all objects on which they fall; hence arises the difficulty or inability of ascertaining with precision delicate shades of colour by artificial light; and the excess of these red and yellow rays also causes pain and fatigue to the eye, when long exposed to its influence. The excess of colour existing in the artificial spectrum, the patentee proposes to correct, by transmitting the rays of artificial light through glass, so prepared as to present, when formed in a proper manner, a medium analogous to that presented by the azure tint of the atmosphere to solar or natural light. By the employment of this invention, which the patentee terms "achromatic glass," the following improvements are said to be gained: The quality of artificial light becomes greatly improved as to purity, being more or less deprived, at pleasure, of its excess of colour, and consequently of its disagreeable and painful glare; its powers of diffusion, and the ability to ascertain by its delicate shades of colour correctly, are greatly increased; the shadows thrown by the objects exposed to its rays are transparent, grey, and cool; thus, altogether differing from the hot and brown opacities forming the shadows of incorrect light; and lastly, the points most highly illuminated by the corrected light are brilliant, pure, and of true tone, in place of being loaded with a glaring and unnatural ruddiness.

Of the quality and source of the achromatic power.

It is a law of light, that when luminous rays are transmitted through a coloured medium, a certain proportion of the rays complementary to the colour of the medium presented shall be neutralized, or so disposed of as not to be in active and visible agency as portions of the light transmitted. Thus, if light be made to pass through ruby-tinted glass, it will appear ruddy, because the blue tint, neutralizing the colours complementary to its own hue—namely, the yellow and the blue, allows the red to predominate in radiation; yellow-tinted glass will also neutralize the blue and the red ray; and blue-tinted glass, the yellow and the red. From this it will be evident, that inasmuch as the excess of colour to be corrected in artificial light exists in the red and yellow portions of the artificial spectrum, the base of the material or compound possessing such power of correction must always be such as shall impart to glass a blue tint or tinge of colour; and such tint or colour will, within certain limits, always be a warranty and assurance that the glass so tinted possesses achromatic or purifying properties with regard to artificial light. The material now in general use for the purpose of imparting a blue colour to "small" or "azure blue," viz., cobalt—in those states of preparation known as "small" or "azure blue," and "saffre," imparts to glass the power of achromatizing artificial light with certainty. The lightest appreciable tint that can be given to glass by these preparations of cobalt (that is to say, a tint or tinge, but just or barely visible to the eye when the glass is in the form adapted for use) renders such glass achromatic, or a purifier of artificial light, by imparting to it the power of correcting some certain portions of the degree of colour existing in its spectrum; and from this, the lightest appreciable tint or tinge of colour (which is called the lowest achromatic power), a succession of powers may be obtained, by a gradual increase in the proportion of the achromatizing material added; and, consequently, in the depth of tint, until that point or power be reached which forms the natural boundary of their range; that is to say, a point or power by which all excess of red or yellow colour in the emanating rays is neutralized.

It is manifest that the range between the lowest and the highest achromatic powers is capable of numerous divisions into progressive degrees or intensities, each of which will be found to possess some peculiar quality that renders it most desirable, according to the required effects of illumination; such effects commencing at the lowest, and ending at the highest, attainable power or degree of improvement. Thus, the exact tint or power sought in any particular instance would depend on the judgment of the manufacturer, guided by the considerations of the nature of the medium required, as to form and thickness, and the character and quality of the light previous to correction; while the exact quantity of achromatizing material added, to obtain the required result, will depend on its purity and strength as a colouring agent, and also upon the peculiar character of artificial light to be corrected or achromatized. The following are the tests for determining the point of highest achromatic power: The corrected artificial light to be tested being enclosed in a fitting box or lantern, let a direct ray fall on a white substance, as paper, side by side with a direct ray of a warm sunlight (as of a summer noon), in a room to which no ray of light has access. So long as the ray of corrected artificial light is of a warmer or ruddier quality than the ray of solar light, the achromatic power is short of its highest intensity, and, therefore, within the range of true achromatic powers, or further and more perfect correction. If the artificial light appear colder or bluer than the solar light, and is not an achromatic but a coloured medium, applicable in no way to the improvement of artificial light by the correction of the excess of coloured rays emanating therefrom. If the qualities of the respective rays be the same, then it will be evident that the highest point has been reached, and the medium is at its highest available power or state. It is scarcely necessary to state, that the nearest approach to the correction of the artificial spectrum falls to produce a light in all respects identical with sunlight; a point may indeed be reached, beyond which the correction of artificial light to be corrected or achromatized. If the artificial light appear colder or bluer than the solar light, and is not an achromatic but a coloured medium, applicable in no way to the improvement of artificial light by the correction of the excess of coloured rays emanating therefrom. If the qualities of the respective rays be the same, then it will be evident that the highest point has been reached, and the medium is at its highest available power or state. 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Mining Correspondence.

ENGLISH MINES.

BARRISTOWN.—We shall resume driving the 28 fm. level end west on Monday next; the distance from the present west end, in this level, to the middle lode, is about 6 fms., should it continue down in its present course; the object in driving this end further west, 6 or 8 fms. before cross-cut south, is to get immediately under the 18 fm. level south cross-cut, as the ground to the east of it is broken and unstratified; the cross-cut south, in this level, at flat-rod shaft, is east of the slide, and will have to go several fms. further before we cut the lode in the 18 fm. level end west; we have taken down no lode since my last on south part of this lode, working on tribute. The 20 fm. level, behind the present end, looks more regular as we get west, worth between 25l. and 30l. per fm. In the 12 fm. level end, the lode is also looking very regular, worth about 16l. per fm. In the middle lode, in the 18 fm. level, the west end is not altogether so productive of ore, but still maintains its regularity and size, worth about 12l. per fm.; the rise, in the back of this level, and eastern end, are improved—the latter worth about 10l. per fm., and the former 16l. A winze, sinking in the bottom of the 12 fm. level over this, is also worth about 14l. per fm. We have no change in any other part of the mine. I could not succeed in getting a vessel in Waterford yesterday, although I am in treaty with one discharging there, which, I have no doubt, will take the present cargo away. The weather at present will not admit of any departures from Waterford Harbour.—THOMAS ANGOVE: March 26.

BEDFORD UNITED.—At Wheal Marquis, I beg to inform you, that in the 80 fm. level, east of the slide, we have cut what we believe to be the main lode, although it is near 2 fms. further south than where cut in any of the levels above; the lode has been cut into about 2 ft. (with no north wall) in the bottom of the end, and is a rich course of ore; after it has been opened on a little further, we shall be able to report more decidedly as to its being the main lode, and the value thereof; the lode in the stopes, in the back of this level, is still worth 35l. per fm. There has been no lode taken down in the 70 fm. level east, since last report. The lode in the 58 fm. level east is 18 in. wide, and unproductive. The tribute department is without important alteration. At Liscombe, the lode in the end and rise is looking very promising. The sumpmen, in the south engine-shaft, have commenced driving east; the lode is 3 ft. wide, producing good stones of ore. We shall set the shaft to sink on our usual setting day, next Saturday. In the adit level, there is no alteration. We weighed at Morvelham, on Friday last, January ores 111 tons (21 cwt.) 4 cwt. 2 qrs., and sampled, Feb., computed 120 tons.—JAMES PHILLIPS.

CUBERT SILVER-LEAD.—We have this day held the public setting for April, also made the pay for February—the particulars of the former (as a setting-report) I have forwarded you by this post, by which you will observe, we have 10 pitches working, employing 81 men on tribute, their prices varying from 1l. 10s. to 6l. per ton. The ground in the 35 fm. level cross-cut is a little improved, driven from shaft 3 fms. 4 ft.; we expect to drive about 12 ft. more to cut the great lode. In the 25 fm. level, going west, the lode within the last 6 ft. driving has improved; it is now 18 in. wide, yielding some good saving work; in the eastern end here the lode is 2 ft. wide, 10 in. of which is good work. In the 15 fm. level, driving east, the lode is 1 ft. wide, and good work. Henry's shaft is sunk within 8 ft. to the 25 fm. level; the lode in said shaft is 2 ft. wide, ore throughout.—R. ROWE: March 26.

CARADON WHEEL HOOPER.—Not being aware I should be called upon to give a report of your mine at the time I was there, I omitted to take particular notice what with your lodes are; also the distance from one lode to the other, and how far you have driven on the course of the lodes you have opened on, but was very particular in examining the qualities of the lodes, and their walls and regular bearing; after having done this very minutely, I looked at the locality and the situation of the mine, being so near South Caradon, with parallel lodes, and then viewing your large strong lodes, with well-defined walls and regular bearing, and their composition having everything in them congenial for copper, and a fine strata, and spotted with copper pyrites. I could not but be decided in my own mind that it is a very fair speculation indeed; and, after you have developed the various lodes you have in, your sett at the depth you intend, I shall be disappointed if you have not a profitable mine, which will amply repay your adventures for their spirited outlay. In conclusion, I beg to say, I was much pleased with the manner you are prosecuting your mine, getting your shaft down to a proper depth, in order to cut all your lodes at the 50; where we may naturally expect, from its indications near the surface, you will meet with copper. I should be right glad if all our infant mines in this neighbourhood were about to be prosecuted in the same manner; but, for want of such economy, I fear that many good mines will remain unproved for a time.—N. FAULK: *Wheal Gill*, March 29.—Since Captain Faulk's visit to this mine, I am happy to say, that we have intersected a branch in the shaft, about 6 in. wide, which has nearly cut out the ironstone, and from which we have taken some good stones of yellow copper ore; this branch is daily improving. I think by next week I shall be in a position to give the shareholders a more satisfactory and an encouraging report; bear it in mind that our shaft is down 46 fms. 4 ft.—and, should the ground continue as at present, it will take about seven weeks to sink as deep as the 51, where we intend to commence a cross-cut, both north and south, to intersect the lodes; but we have every reason to think that the ground will alter for the better, and that shortly; I wish to remind you, that ironstone ground is not a bad neighbour in a killas country.—JOHN SEYMOUR: March 30.

DARTMOOR CONSOLS.—Any man that has the least knowledge of mining, can easily discover (if he looks at the strata and the indication visible) that this mine is a first-rate speculation; and, as to the last working, every practical and thinking miner in the neighbourhood must confess it was inaccurate, as well as extravagant. Where can we find a mine again of this description that has made a return of 80,000l., and not sunk more than 10 fms. under the adit? I never heard of such a thing in Cornwall or Devon before; and I beg to say, that if the mine is managed properly, there is not the least doubt but what it will amply reward the adventurers for their outlay. I do not wish to confine myself to the Dartmoor Consols only, but I believe there are several lodes on Dartmoor that are worthy of trial, and whose surface indications tell me that small outlays would put them in a position so as to give good dividends. If those who have the practical knowledge of mining would give themselves the trouble to look at Nature in all her grandeur, as represented to their view, we should soon become more acquainted with strata, lodes, cross-courses, slides, &c.; and I believe it would also be the means of somewhat establishing a more correct rule for mining. Nature is the most intelligent schoolmaster that a miner can apply to for knowledge respecting minerals; it is true, she has not given us her written law for our guide, but she shows forth her chemical powers as a substitute—so that we can discern the properties of minerals, if we minutely examine them. Now, as regards the lodes on Dartmoor, we find but little gossan, as the strata is more congenial for tin than any other mineral; but we find the same surface indications as we do in the west of Cornwall around the granite hills, in the parish of Wendron; I find that almost every lode on Dartmoor is surrounded by deposits, either to a right or left angle, as well as cross-courses, causers, &c., which, of course, are beneficial for minerals, and lodes are seldom known to fail from making rich bunches of tin whenever they come in contact with the above. Now, I find by comparing the surface indication of lodes at Dartmoor, and those in the great mass of granite in the north-east district of Cornwall, to resemble each other both in size and quality—the only difference I see, is the lodes in Cornwall cause more mud, which can be easily accounted for, as they are chiefly surrounded by rich copper and lead lodes; but as they get off in granite they lose the mud, and tin is found to be very rich. In the eastern district of Cornwall a light blue killas is the strata for copper, when the lodes are within half a mile of the granite hills; and white killas is more congenial for lead, especially when there are elvan deposits near either, at a right or left angle; and tin lodes that are found to run in slate are generally rich in red killas; but granite is generally found to be the most productive strata. I beg again to state, that the Dartmoor Consols is a first-rate speculation, and I do not know where to find its equal.—JOHN SPARGO: March 31.

DEVON AND COURTENAY CONSOLS.—The 30 fm. cross-cut is 5 ft. from the engine-shaft; we are carrying the end 6 ft. wide for the first 2 fms., for a plat to lodge stuff, after which the end will be carried 4 ft. wide. The lode in the deep adit, on south lode, is 2 ft. wide, composed of munda and spar, with some ore. The lode in the shallow adit, on north lode, is 20 in. wide, composed of munda and spar, with some copper ore, looking very promising. The lode in flat-rod shaft, on north lode, is just the same size as last reported (4 ft.); the leader of ore is increasing, which is now 15 in. wide; in the western end of shaft it is gradually dipping east, although we have had the branch of solid ore for the last 7 ft. sinking, varying in size from 10 to 15 in. wide (which is to be seen); it has not extended out in the shaft east more than 3 ft.—the lode altogether is looking very promising.—J. JON: March 30.

EAST CROWDALE.—I beg to inform you that, on Saturday last, in driving a hole in the bottom of our engine-shaft, we had the misfortune to break the windows of our sinking lift, and have been obliged to get a new one cast, which we are now in the way of fixing; this has delayed our operations in this place. I hope the men will get to work again this evening. I am glad to say, the ground in the shaft is improved for sinking; if it continues, our progress will be much faster than it has been for some weeks past. Our ground is much stiffer in the adit level, towards the Rix Hill lodes, which you will perceive by the price given for 10 fms. Our operations on the lead lode are obliged to be abandoned for a few days, owing to the great increase of water, occasioned by the late heavy rains. The lead still holds out the same promising appearance as when last reported upon.—STEPHEN PAUL: March 30.

EAST TAMAR CONSOLS.—Hitchin's shaft is sunk 11 ft. under the 60 fm. level. The lode in the 60 fm. level north is 15 in. wide, fluor-spar and silver-lead ore; the lode in the 60 south is 18 in. wide, work of a good quality. The lode in the 54 fm. level north is 10 in. wide, saving work; the lode in

the 54 south is still in disordered ground. We have cleared south from Gourd's shaft 9 fms., and expect by the end of this month we shall clear to the south end of the old workings, between Whitstone and Fursill, which will open a piece of ground 10 fms. high; very kindly ground for tribute. At Fursill, Harrison's shaft is sunk 9 ft. under the 46 fm. level; the lode in the shaft is 20 in. wide, fluor-spar and silver-lead ore. The lode in the 46 fm. level is 20 in. wide, fluor-spar and silver-lead ore. The lode in the 38 fm. level is 18 in. wide, saving work.—B. ROBINS: March 29.

GREAT MICHELL CONSOLS.—The engine-shaft is down 10 fms. 1 ft. below the 22 fm. level; the lode therein is without important alteration, being composed of fluor-spar, munda, and rich stones of ore.—T. RICHARDS: March 30.

GREAT WHEEL MARTHA.—We have commenced driving the cross-cut towards the lode at the 40 new mine. In order to have a trip-plat and tram-road in the level, to save the enormous expense of wheeling the stuffs to the shaft, we have been compelled to commence our cross-cut on a hard floor of spar, which will cost more per fathom than we calculated on; but the plan will, eventually, save much money to the shareholders. We have, however, put a sufficient force in the end to intersect the lode at the time specified in our annual report. The lode in Sherrall's Bottoms is about 3 ft. 6 in. wide, composed of capel, spar, and munda.—T. PENALUNA: March 27.

HAWKMOOR.—In the 15 fm. level, east of Hitchin's shaft, the lode is disordered by a small cross-course.—P. RICHARDS: March 30.

HEIGSTON DOWN CONSOLS.—The lode in the 20 fm. level, west of north shaft, is 2½ ft. wide, producing good work for tin; the tribute pitch, in the back of this level, is looking well.—W. RICHARDS.

KIRKCUDBRIGHTSHIRE.—This being our monthly setting in the mine for April, I beg herewith to hand you a statement thereof, and also of our prospects.—Stewart's shaft is 6 fms. under the 30 fm. level; the lode in it is 4 ft. wide, containing a slight mixture of lead, on the whole, rather poor; with good speed, I hope to see this shaft to the 40 fm. level by next setting-day. The lode in the west end, in the 30 fm. level, is from 4 to 5 ft. wide, producing 14 ton of lead per fm.—set to six men, at 5l. per fm.; the stopes in roof of this level are producing lead, worth 12l. per fm.—set to six men, at 4l. per fm.; the lode in the east end, in this level, is from 3 to 4 ft. wide, poor—set to six men, at 3l. 15s. per fm.; the stopes in roof of this level look well, worth 12l. per fm.—set to six men, at 2l. 5s. per fm.; the stopes in east end of the winze are worth 5l. per fm.—set to two men, at 2l. per fm.; the lode in the 20 end east has not improved since my last—set to four men, at 5l. 5s. per fm.; the stopes in the roof of this level are producing lead, worth 3l. per fm.—set to two men, at 55s. per fm. In the adit end, driving east, we have intersected several slides, which have greatly diminished the lode—set to two men, at 55s. per fm. We expect to ship about 30 tons of lead for the market in the coming week, provided we can get a suitable vessel—we are, therefore, looking out for one. In putting up the erections to Crouch's, and other matters of the mine, we are doing our best.—JOSEPH BUZZO: March 27.

LAMHEROEE WHEEL MARIA.—We have not sunk the engine-shaft, the sumpmen having been engaged the greater part of the month in cutting plat, &c., for bearers of eastern, dividing and casing shaft to the 30 fm. level, and in assisting the lower shaftmen in fixing the pitwork in Davey's shaft, which work, owing to the water and the smallness of the shaft, was one of great difficulty and trouble; this, however, is now completed, and has effected a considerable saving, as the engine, which before was obliged to be driven eight strokes per minute, to enable the men to sink, now goes only four strokes per minute, and our consumption of coals is fully one-third less; and since this work at Davey's shaft has been completed, we have sunk 3 ft. 6 in., and I confidently anticipate this shaft in future to be sunk about 3 fms. per month; and at Hay's engine-shaft we hope to do at least 2 fms. per month. Our operations on the north are still confined to the working by a pair of tributaries on the B lode.—JOHN TARN: March 30.

SOUTH TAMAR UNITED.—The men have cleared and secured the plat at Monday's shaft; the adit level is looking very favourable for clearing. We are getting on as expeditiously as possible with the engine and sundry work.—B. ROBINS: March 29.

SOUTH WHEEL TRELAUNEY.—The engine-shaft is sunk 15 fms. from the surface—the ground in which we consider favourable for sinking, and will stand without timbering; we have for the present suspended the shaft, until the adit level is communicated to it, which will be 13 fms. deep; to facilitate this work, we have commenced driving a cross-cut west from the shaft to intersect the lode; afterwards, to drive north, towards the adit level, now driving south. We calculate three months to complete this work, for the water to have free course through the adit level; by far the greatest quantity of water we have in the shaft at present is issuing from a cavity, 5 ft. above the back of the adit level; we shall, therefore, be able to take it up at the adit, which will effect a great saving. Soby's lode, in the adit level south, is 2½ ft. wide, composed of gossan, spar, priam, and soft white killas, throughout which are found sprigs of lead; but it is evident we must go deeper before we expect to find any great quantity of lead, which we are preparing to do as fast as possible; the direction of the lode is 19° west of south, and the underlie 18 in. in a fathom east—being situated on rather high ground, and the lode only seen 13 fms. from the surface. We think the indications presented at that depth, and under the circumstances, together with the beautiful strata, to be very promising indeed; after the level is communicated to the shaft, we shall be able to resume sinking the latter, without the aid of the engine, for many fathoms below the adit—so that no time will be lost whilst the engineers are erecting the engine, and the lifts are being prepared; the cost of which, if purchased new, will be as follows:—viz. No. 1, house water-lift (purchased), 13 fms., 46l. 17s.; No. 2, tyne-lift (not purchased), 30 fms., 142l. 3s.; No. 8, drawing-lift (not purchased), 10 fms., 42l. 12s.; 40 fms. of 8-in. rods, strapping-plate, bolt and staples, &c., 21l. 5s.—251l. 17s. Should these articles be purchased second-hand at any sale, which we shall endeavour to do, we may safely say we shall save 30l., or more money. Our small account-house, smiths' and carpenters' shops, are nearly completed, together with the engine-house; and we are daily in expectation of seeing the engine landed on St. Germain's Quay—in telligence of which will be sent us immediately, when waggon will be sent to bring it to the mine. Mr. West has engaged that no time shall be lost in fixing the engine all complete when the house shall be ready to receive it, and the engine is on the spot. The adit level south, on Soby's lode, is again set to drive, by six men, at 4l. per fm.—extent for the month; and six men set to drive a cross-cut west, from the engine-shaft, to intersect the lode at 5l. per fm.—extent for the month.—W. LEAN: March 27.

TINCROFT.—We have this day got the water in fork to the 100 fm. level in the north mines, and hope, in a few days, to be in regular course of working there. The south lode, in the 90 fm. level east, is 2½ ft. wide, worth 10l. per fm.; the north lode, in the 90 fm. level east, is 2½ ft. wide, worth 6l. per fm.; in the 90 fm. level west, on north lode, the lode is 2 ft. wide, with rich stones of ore. The 80 fm. level east is producing some good work for tin, worth 7l. per fm.; the 80 fm. level west is worth 10l. per fm. The lode in the 70 fm. level west is 12 in. wide, ore, but not rich. The lode in the 60 fm. level west is 15 in. wide, producing some tinstuff and stones of ore. The lode in the 50 fm. level west is 2 ft. wide, worth 8l. per fm. The lode in the winze, sinking below the 70 fm. level, to the west of engine-shaft, is 2½ ft. wide, worth 5l. per fm.; the tribute department in this part of the mines is, on the whole, improved since my last report. At Palmer's, the lode in the 38 fm. level west is 2 ft. wide, producing some ore, and very promising. We set another pair of tributaries to work in the bottom of the 40 fm. level last week, and hope to get more to work in a week or nine days. At south mine, on Highburrow lode, the engine-shaft, sinking below the 152 fm. level, is producing good work for tin, worth 60l. per fm.—i.e., for the length of the shaft (which is 12 ft.), 6 ft. deep; the lode in the 152 fm. level west is 2 ft. wide, worth 10l. per fm. The lode in the 142 fm. level east is 2½ ft. wide, worth 15l. per fm. The lode in the winze, sinking below the 120 fm. level, is 4 ft. wide, worth 10l. per fm.; the lode in the 120 fm. level east is 3½ ft. wide, worth 20l. per fm. We have not taken down the lode in the 110 fm. level east for some time, as we shall be able to take it down to better advantage, after having driven by the side of it for some distance further. The stopes, in the bottom of the 100 fm. level, are worth 20l. per fm.; the pitches in this part of the mine continue to yield fair quality tinstuff; we have succeeded in clearing the Wheal Providence adit to the lode, which we shall now call Druid lode, it being the same as is known by that name in Carn Breas Mines; it will not be necessary to work the engine again, till we shall have cleared the adit to the extent of it eastward. The 90 fm. level west, on Chapple's lode, is producing some good quality ore, but is much disordered by cross branches. The pitches in the back and bottom of the 100 fm. level continue to produce good work for copper ore, with some tin.—WILLIAM PAUL: March 26.

TRELEIGH CONSOLS.—In the 110 fm. cross-cut, east of Christie's, the ground is rather favourable; we hope to see the lode this month. In the 100 east of ditto, the lode is about 2 ft. wide, with stones of ore; we have driven south 5 ft. in the last month, and are satisfied there is no more lode than the one in which we are working; the 100, west of ditto, is suspended. At Garden's shaft, below the 90, the ground is very hard, in elvan. In the 90, west of Garden's, the lode is 18 in. wide, and more promising; now worth 5l. per fm. In the 80, west of ditto, the lode is 2 ft. wide, producing stones of ore—not to value; in the 80, east of ditto, the lode is 4 ft. wide, rather fallen off in value the last few days; now worth 30l. per fm.; there is a horse of killas in the middle of this lode. In the rise above the 70, west of ditto, the lode is 2 ft. wide—no mineral—this is new; the 70, west of ditto, is suspended until the above rise is holed to the winze below the 60 fm. level. The winze below the 60 west, is suspended; a pretty deal of water in this. In the 70, west of Goodfortune, the lode is 3 feet wide, and rather improved; worth 12l. per fm.; the bottom of this end is very much better than it has been in any one place; west from Goodfortune shaft, at Symon's shaft, below the 60, the lode is 3 ft. wide, but poor for ore; this will be holed on the 70 and in about a fortnight from this time. The winze and rise, in the 44 west, are suspended, being poor. The 20, west of ditto, is suspended—poor.

TAVY CONSOLS.—We sampled our parcel of copper ore on Thursday last, which weighed 50 tons 16 cwt. 8 qrs. dry. The western stopes, in the 12 fm. level is improved; we have a good lode in the back, although some parts of it is much interspersed with munda; we are getting on with all possible dispatch with the water-wheel, and should have got the axle on its brasses to-day, had not the weather been so unfavourable—the rain this week has much retarded surface operations. The men are getting on briskly with the water-course.—A. MEDLYN: March 27.

TRETOIL.—We are pushing on the cross-cut south in the 40 fm. level as fast as possible; the ground in it is much the same as it has been, hard, dark killas—price, at present, 10l. per fm.; we have sunk about 4½ fms. on the Mine Park lode under adit; the lode in the winze is 1 ft. wide, unproductive; it is not likely that we shall be able to sink much more here, in consequence of having cut water; the underlay of the lode in the winze does not correspond with the underlay of the lode already cut in the 40 fm. level cross-cut; its underlay in the winze being about 15 in. in a fm.; in the cross-cut 2½ ft., which would leave us in the 40 fm. level cross-cut from 8 to 4 fms. more to drive, unless the lode underlays more before it reaches the 40 fm. level, which is very possible, the distance being great, and but little done on the lode to determine its underlay with certainty; the pitches are not looking so well as formerly.—HENRY WILLIAMS: March 30.

UNITED HILLS.—In the 90 fm. level nothing done for the past week. In the 80 fm. level, eastern end, the lode is 3½ ft. wide, worth 25l. per fm.; west of cross-cut the lode is 18 in. wide, worth 15l. per fm. In the 70 fm. level, east of eastern shaft, the lode is 8 ft. wide, worth 10l. per fm.; in the stopes the lode is 3½ ft. wide, worth 20l. per fm. In the 60 fm. level no tutwork; in the shallow adit the lode is 3 ft. wide, producing stones of ore. At Wheal Charles, in the 50 fm. level, the lode is 2½ ft. wide, poor. In the 40 fm. level, eastern end, the lode is 3 ft. wide, worth 12l. per fm.; in the winze the lode is 4 ft. wide, worth 18l. per fm.; in the stopes the lode is 2½ ft. wide, worth 18l. per fm. At Wheal Sparrow, in the 40 fm. level, west of Turner's, the lode is 2 ft. wide, worth 5l. per fm.; the stopes are suspended, and set on tribute at 7s. In the 30 fm. level the lode is 7 ft. wide, worth 25l. per fm. In the 30 fm. level, no tutwork; in the adit level the lode is 1 ft. wide, unproductive.—T. THREVENEN; R. WILLIAMS: March 30.—[We understand that the 90 fm. level is now in fork, although not mentioned in the above report.]

WHEEL ADAMS.—I beg to inform you that everything is being done to facilitate driving the 60 fm. level south, to unwater the 50, in which, it is said, a rich course of lead is standing; but it cannot be removed before the level is drained, owing to the surrounding strata being exceedingly soft. The lode in the end (60) is about 2 ft. wide, disordered by the influence of the cross-course; it is about 16 fms. from (short of having reached) the ore ground in question. The lode in the 40 fm. level, driving south on the western vein, is about 4 ft. wide, one part of which is producing tolerably good saving work; the cross-cut, driving west to cut this lode at another point, is still in hard elvan. The ground in the cross-cut, extending towards the copper lode, is a little improved, the joints, which are numerous, are filled with chlorite and yellow copper ore. Most of the pitches are producing a fair quantity of lead, mixed, however, with much munda and earthy matter. The parcel of lead, now at the cellars, will be shipped on Wednesday, immediately after which other parcels, about 40 tons, will be sampled and offered for sale. Every preparation is being made to carry into effect the several necessary alterations and improvements, fully described in my general report of the 16th inst.—J. PRINCE: March 29.

WHEEL AGNES.—The lode in the adit level is 2½ ft. wide, producing some very good stones of lead, better than I have seen in driving the last 2 or 3 fms.—B. ROBINS: March 29.

WEST WHEEL JEWEL.—In the 115 fathom level, east of 'cross-cut, on Wheal Jewel lode, the lode not taken down in the past week. In the winze, in the bottom of the 100 fm. level, east of cross-cut, on the same lode, the lode is 20 in. wide, producing good stones of yellow ore; in the 100 fm. level, west of cross-cut, on the same lode, the lode is 1 ft. wide, worth 4l. per fm. In the winze, in the bottom of the 85, west of cross-cut, on the same lode, the lode is 20 in. wide, with more promising appearance than when last reported. In the 70 fm. level, west of Williams's cross-course, on the same lode, the lode is 9 in. wide; this lode is looking much better than when last reported, worth 4l. per fm. In the 12 fm. level, west of Hodges's cross-course, on Tolcarne tin lode, the lode is 2 ft. wide, worth 12l. per fm.; in the winze, in the bottom of this level, the lode is 2 ft. wide, worth 21l. per fm.; the stopes, in the bottom of this level, east of George's winze, are worth 10l. per fm. In the stopes, in the bottom of the adit, east of Pryor's winze, on the same lode, the lode is 18 in. wide, worth 18l. per fm. In the adit end, west of Hodges's cross-cut, on the same lode, the lode is 18 in. wide, worth 12l. per fm. In the 12 fm. level, west of old sump shaft, on the same lode, the lode is 1 ft. wide, worth 12l. per fm.—RICHARD JOHNS: March 27.

FOREIGN MINES.

ST. JOHN DEL REY MINES.—Morro Velho, Dec. 28.—Heads working during 28 days, 67-6. The stamps have gone well through the holidays, the Warre being supplied with rejected ore. Capt. Treloar has kept the Cachoeira stopes working through the holidays, to bring them forward as much as possible.

Mines.—The works are progressing well, but you will be sorry to find that the lode in the East Cachoeira shaft is not looking well. The captains are doubtful whether this shaft, as a sump, should not be removed further west; this will, however, take some months to decide. The hauling-wheel had the water turned on it on Christmas-eve, it is hoped to get it to draw next month from the East Cachoeira shaft.

Jan. 8.—Produce for December, 13,852-6 cits. Morro Velho, 13,729 cits.; Cata Branca, 123-6 cits.—13,852-6 cits.—133-083 lbs. dry. The 13,729 cits. of Morro Velho were obtained from 3188-8 tons of ore—4-902 cits. per ton—here again is a discrepancy. In November there were 22 tons rejected, and the yielding was 4-136 cits. per ton, while in December 203 tons of rejected ore were brought in and stamped, in addition to the supply from the mine, and the yielding was 4-902 cits. per ton; it is impossible, therefore, to trace all the causes of these variations. It is quite certain, however, that better stone was stamped, for Mr. Smyth frequently remarked during the month that he had some excellent-looking ore on the floor, but there was also a good deal of very bad-looking ore, and it is perfectly impossible to predict what average these diverging influences may establish. In July there were 201-6 tons rejected, as you have remarked, and the yielding was 4-07 cits. per ton; and in Dec., by taking in 203 tons, the yielding is 4-902 cits. per ton; after the result it is very easy to dodge about for adequate reasons, and reasons which no one can gain-say either at the time, but which in the long run are sure to contradict themselves; and, after all, a variation of 24 grs. or 36 grs. m. 383-771 grs. in a ton English is almost an imperceptible quantity in itself, and it is only in multiplying it by the large amount of tonnage stamped, that it becomes agreeably or disagreeably felt. There were considerable stoppages in the stamping during December, mentioned by Mr. Smyth in his report; unfortunately, we are at this moment experiencing a repetition of them. Last night's rains have blocked two leats—the Christas, which will occupy until to-morrow night to clear, and the Bananal, the extent of which damage I do not yet know.

Mine Report.—There is this month a discrepancy of no less than 520 tons, between the mine and reduction report, in the supply of ore from the mine; Mr. Smyth is right I doubt not, but I think Capt. Treloar is not far wrong either. If you recollect, in 1843 I began to alter the estimate of the weight of the cubic foot of ore, in consequence of its being picked—picked ore being so much heavier than unpicked; but this new measure of weights was found so extremely inconvenient for comparing our proceedings with previous results, which was very essential at that time, that we returned to the old system, the motive for which was assigned at the time. Now, it may have happened that the very carts of ore, which Capt. Treloar weighed, may have contained very good ore, equal to picked ore, and hence his superior computed weights for the month of December; besides which, he estimated 18 cubic feet to a cart, as he found those he measured—but the strike measure of our carts is only 16 cubic feet. It is quite evident that, unless every cart load of ore supplied be actually weighed, no assumed weight by measure can approximate to accuracy with our ores. Unpicked ores weigh about 113 lbs. per cubic foot, picked ores from 120 to 135 lbs.; and as they are sometimes picked, sometimes half picked, sometimes unpicked, sometimes mixed with rejected ore, it is obvious that any assumed weight by measure must be extremely erroneous. The way to regard Mr. Smyth's is, that 1 ton makes 20 cubic feet, or, instead of saying so many cits. to a ton, say so many cits. to 20 cubic feet of ore; and then this is literally accurate under every circumstance and difference of weight, and is really the natural and true way of estimating the duty of borse. To all appearance, the lode in the Bahu seems to be looking better, for the very extensive bed or floor of arragonite, which seems to extend right through the Bahu bunch, is seated on excellent-looking ore; but it takes so long to verify these things in the hard lode, that it requires months to collect data on which to form an opinion. A similar bed of arragonite is quite new to me, and the beauty of the crystals is very great, but all are broken in the blasting—this substance used to occur in Capt. Lyons's time at the present tram-road level; and I have shown Capt. Treloar the trace of a "floor," which traversed the whole of the Bahu in 1858; and which, I recollect, induced one or two would-be geologists to pronounce the whole lode to be unbottomed at an end. If any inference might be drawn from this coincidence, it would be that another 60 fms. in depth of lode is beginning again. The lode in the Bahu sump shaft is very poor, as usual; but it appears to contain less killas. We have had very bad luck with the pumps in the Bahu lately, and this morning there are no less than 20 feet water in the mine; what with breakages of pump rods, gudgeons of water-wheel, and now the leats from heavy rains, we are all at sea again. Capt. Treloar is quite out of spirits with anxiety and exertion.

Of course, the supply of ore has suffered very materially; and there must necessarily be a great hole made in the January produce. The great length of the lower lift of pumps, which Capt. Treloar has for some time complained of, is the principal cause of the breakage of the rods and gudgeons; and he has been unwilling to make any alteration in the pumps until it shall be made for

Dreadful Colliery Accident.—Seven Lives Lost.—An inquest was held on Wednesday, at Church Gresley, Derbyshire, on the bodies of a number of men who were killed in a colliery the day previously. It appeared that on Tuesday, the 20th ult., about half-past five o'clock in the morning, 14 colliers were at work

got into the cage at the Church Pit, Church Gresley, to be let down to their usual employment. Daniel Batch, the engine-man, let them down, but when they had descended about 40 yards, he heard one of the wheels crack, and immediately stopped the engine. He ran to the pit-mouth, and found the drum running fast, the spur-wheel having broken, and fallen under the drum; the cage was precipitated to the bottom of the pit, which is 270 yards deep; the rope broke off the drum, and went down the shaft, although longer than the depth of the pit. It was between nine and ten o'clock before a rope could be attached to the pumping-engine, and another cage let down; when the bodies of the dead and dying were drawn up.—The jury, after a patient investigation, returned a verdict to the effect:—"That the deceased met their deaths by the accidental breaking of the spur-wheel."

Boiler Explosion.—On Monday last, one of the steam-boilers belonging to J. Wood, and Brothers, Glossop, blew up with great violence, unroofing the boiler-house and knocking down the wall with such force that stones flew across the yard into the mill windows, and smashed both glass and frames—happily no one was near at the time; had it been 5 minutes later, the consequences might have been shocking, as the hands would just have been passing after dinner.—*Derbyshire Courier.*

GEORGIA TIN MINES (Cornwall).—We have called attention, on more than one occasion, to these mines, which are situated in a district particularly fortunate in the production of some of our richest and most lasting mines; and it is with great pleasure we hear that the necessary arrangements having been completed, it is intended at once to commence operations on an enlarged scale, and allow Capt. Edward Thomas, and the other mining agents, an opportunity of proving the correctness of their favourable reports upon the capabilities and extent of these mines; and as there are upwards of 11 lodes, all rich in tin, and from the circumstance of the lodes being parallel, and contiguous to each other, we are confident we shall be borne out by the result, that this mine will prove as productive as any of the most fortunate mines in the district. The principle adopted in carrying out the "Cost-book" for the management of this company, at once shows the clearness and simplicity of the system; and, from the character and position of the parties immediately concerned, we look forward with some degree of confidence to a favourable result for the full and entire development of a plan, as well conceived, as we are sure will be ably executed. We had intended to have given the reports of Capt. J. Gray, Benjamin Champion, Hannibal Taylor, John Roberts, Edward Thomas, &c.; but, from the great pressure of matter this week, we are unable to do so, but we gather from the reports, that the amount of tin already discovered is sufficient to yield profits, which must be tempting even to the most greedy; and here it should be remarked, the company have not to spend their money in looking for what they may never find, but are at once working upon that which has already been discovered and cleared, and with prospects most encouraging. We shall again remark upon the Georgia Tin Mines.

A mine captain and a mine surveyor, with a party of mechanics, sailed from Liverpool on the 28th ult., per *Antelope* steamer, in the service of the National Brazilian Mining Association.

LIABILITIES OF ADVENTURERS IN MINES.

Sir,—I should feel greatly obliged to you, or some of your correspondents, for an answer to the following inquiry:—In a mine near Liskeard, in Cornwall, I have 1-128th share; I have paid cost from time to time to the purser, who at length leaves, or is dismissed; I am then applied to for 71 arrears, when I hold the purser's signature, showing it is but 51, including the last call of 11 per share; I am, however, told this does not avail me, as the banker's book is the document they are bound by, as to proof of payment of calls, and the handwriting of their own purser is disregarded. Now, Sir, the question is this:—supposing the purser, either through negligence and fraud, has omitted to pay my money to the bankers, am I, as an individual adventurer, to bear the loss, when I possess the purser's acknowledgment for my payments; or should not the company bear such loss for the misdeeds of their own servant.

Oxford-street, March 28. AN ADVENTURER.
[It appears to us, that if "An Adventurer" can prove he paid any call to the purser, while in the actual service of the company, the directors, or committee of management, can have no further claim upon him for that call, however wrong the purser may have acted.]

GENERAL MINING COMPANY.

Sir,—Remembering that several leading articles and letters appeared in your Journal some months since, upon the subject of these mines, I was glad to peruse in a morning paper, some remarks most fully confirmatory, as they are of your opinion as to the probably flourishing state of the concern eventually. Dividends amounting to 21. 10s. upon 14s., or say 20 per cent., or rather 40 per cent. per annum, for the 50s., is paid in five months, seems to indicate a want of confidence from some cause or another—perhaps want of publicity on the part of the well-intending managers and directors, which should, if possible, be remedied. Formerly no association was so remarkable for its half-yearly meetings as the General Mining Company; and then the reports were preparatory only of calls, instead of dividends. Perhaps, Sir, you, or some of your numerous correspondents, can throw some light upon the nature of the coal, or other business doing by, as well as position of this company. That the shares of this company are still at 6s. on 20s. paid up, surprises every proprietor whom I have consulted on the subject. The managers surely need not fear meeting their constituents, under the vastly improved complexion of affairs, however stormy the meeting of the proprietors may have been formerly—when railways, fresh outlays, new buildings, &c., were the whole burthen of the song, with their very unpleasant accompaniments of large calls. There is such a thing as a meeting "with closed doors," as formerly, and why not now? In short, though every confidence has been placed, and perhaps deservedly so, in the managers—on the other hand, confidence in the proprietors, on the part of the respectable directors, is also equally called for, and can do no harm, if it does no good.

March 31. J. W., an Original Proprietor.
[The remarks of our contemporary will be found in another column.]

WHEEL CURTIS MINING COMPANY.

Sir,—I perceive that a mistake occurs in my letter relative to this mine in last week's Journal—it should have been a 45-inch engine, 5 ft. stroke, instead of a 42-inch engine, and 2 ft. stroke. Your noticing this will oblige.

Camden, March 30. H. A. VIVIAN.

CARADON VALE MINE.

Sir,—In perusing your valuable columns of last week, I was not a little disappointed to find it there stated, that the Caradon Vale sett was about to be put to work again, as I have been anxiously waiting to hear that the sett was altogether given up, that I might have an opportunity of securing her for the company I am now a servant to. The sett is beautifully situated, having on one side a south-easterly slope, in which there are two pretty valleys; I know it to be a piece of ground well worthy the attention of mining speculators, and do fully corroborate all that has been said about the lode in the adit. I have seen some good portions of copper taken from that lode, both in the adit and other parts of the sett, a very little below the surface, with large quantities of mundaic, good spar, pruned, and blue other ingredients congenial to copper; the ground is, as before stated, a light blue killas, quite congenial to copper; and I have no doubt, were the company to carry out the speculation vigorously, and put up a steam-engine, they would be handsomely remunerated for the outlay.—*JOHN SKYMOOR: Caradon Wheel Hooper, March 26.*

THE POLGOOTH MINE, NEAR ST. AUSTELL.

Sir,—I am one of the labourers in the above mine, and, not knowing who the adventurers are, have taken the liberty of addressing this to you, with a hope that, by publicity or private information to parties interested, a stop may be put to a system practised here, that is alike injurious to them and to ourselves. The case is simply this: Mr. David Burn, a Scotchman, and nephew, by marriage, to Mr. Thomas Bell (the manager), is our purser, who, in addition to his original business, has opened (in copartnership, as is supposed, with his uncle) a tally-shop, for the sale of slop linen, woollen drapery, haberdashery, &c., where, though the charges are from 25 to 50 per cent. higher than at regular places of trade, we, as a matter of course, are obliged to buy. Those amongst us, who may, from motives of economy, or aversion to being driven, cut less deep into the tally ledger, feel it, by having no chance except in rejected pitches at a low tribute; whilst others, less particular, and whose families are fond of a tawdry appearance, obtain a choice of places, with earnings much beyond the common average. The workpeople at present are comparatively few, many more being expected to be taken on soon; but, limited as their number is, it is estimated that Messrs. Bell and Burn are making a clear gain out of them of upwards of 20l. a month, over and above the fair profits of trade, and exclusive of their salaries. In addition to the shop, Mr. Bell has taken a small farm, upon which, with the exception of two stems a month (pay day and sunset day), he constantly employs one owner's account man, another two, and sometimes more. Altogether, I have no doubt they find Polgooth a comfortable family mine—whether the adventurers under such management will find her a profitable one, a few short months will, in all probability, determine.—*THOMAS FENNEL SMITH: March 26.*

CUMBERLAND IRON FURNACE.—A correspondent informs us, that the produce of this furnace, for the week ending March 20, amounted to the extraordinary quantity of 150 tons of cold-blast pig-iron. Mr. Musket, in his valuable work *On the Manufacture of Iron*, informs us, that about the year 1730, there were in all England 59 furnaces, making annually 17,350 tons, or little more than five tons a week of pig-iron from each furnace. We have heard complaints made, that the manufacture of iron is still in its infancy. We are no great judges of this matter; but comparing "the infant" of 1730 with that of 1847, we think it will be allowed that "The Metallic Babe" has grown considerably.

MR. ANDREW SMITH, C.E.—Most of our readers are aware that this gentleman has recently withdrawn himself from his west-end engineering establishment, in favour of his son, and devoted himself exclusively to superintending the manufacture of his galvanised iron wire-rope, and lightning conductors, at Poplar. The occasion was deemed opportune by some friends, to testify the feeling they entertained for Mr. Smith, whom they accordingly invited to a dinner, and presented with a beautifully chased silver snuff-box, with the following inscription:—

FARVUM FIGURIS NON FARVUM AMICITIIS.
PRESENTED TO MR. ANDREW SMITH,
IN THE WARMEST SINCERITY OF SPIRIT,
BY A FEW FRIENDS,
WHO ADMIRE HIS SOCIAL URBANITY,
AND TESTIFY TO
THE SOLID VIRTUES OF HIS CHARACTER.

GUN-COTTON.—M. Schönbein has at length broken silence as to the history and constitution of gun-cotton. In regard to the latter careful analysis gives the following results:—

	Experiment.	Calculation.
Carbon	37.43	39.1
Hydrogen	3.54	3.1
Nitrogen	14.36	14.5
Oxygen	54.77	54.3

According to M. Ballot's analysis, pure xyloidine is composed of

	Experiment.	Calculation.
Carbon	37.39	37.31
Hydrogen	4.59	4.84
Nitrogen	5.7	5.75
Oxygen	52.55	52.09

The slightest attention, Prof. Schönbein says, will suffice to show that the composition of gun-cotton differs considerably from that of xyloidine, and that it is a compound poorer in carbon and richer in oxygen than the discovery of Braconnot; that consequently in burning, it ought to produce more gas, have a greater explosive force, and leave less residue than xyloidine. The difference between these two substances are likewise displayed in other properties; for instance, xyloidine, especially at a high temperature, is dissolved by concentrated vinegar; and when water is added, it separates again unaltered; gun-cotton is insoluble in this acid. At the temperature of boiling-water xyloidine dissolves in hydrochloric acid (sp. gr. 1.12) and in nitric acid (sp. gr. 1.38) into a colourless liquid, whence water cannot separate xyloidine. Gun-cotton is entirely in different to this acid. Xyloidine inflames at a temperature of 180°, gun-cotton exposed to a temperature of

210°	inflames instantaneously.
260°	" " at the end of 12 seconds.
175°	" " " 30 seconds.
150°	" " " 10 minutes.
130°	does not inflame at all.

M. M. Schönbein and Baettger promise in a short time extended details on the explosive force of gun-cotton, and on the manner of preparing it.

PROGRESS OF THE ATMOSPHERIC SYSTEM.—We are happy to be able to state, that the full size working model of Messrs. Clarke and Varley's resilient tube, on the Blackwall line, which is being laid down as an experiment to test its capabilities, is rapidly approaching completion; and we hope in our next Number but one, to be able to give some account of the results of its working. A pair of large and highly-finished air-pumps are already fixed in the engine-house of the railway, to be worked by the large Blackwall engine; the rails are laid, and the greater portion of the tube is fixed. Much interest is excited, not only among our own engineers, but we understand, a number of scientific gentlemen in France are anxiously waiting to see the working of this simple, yet beautiful, system.

TRIST VALLEY RAILWAY.—The works on this line are in a most forward state. Large bodies of workmen are employed night and day, as well as on Sundays. The road throughout, we understand, is permanently laid and ballasted; the whole of the embankments, cuttings, and slopes, are complete, and the stations and buildings are nearly finished. On Wednesday next, the 7th inst., the directors, and a select party of their friends, with the contractors, will make an experimental trip along the whole length of the line. We are also informed, that on the 16th inst. the line will be generally opened for the carriage of goods, although it is not expected that it will be made available for passenger traffic before the middle of next month.

THE LATE ACCIDENT ON THE HULL AND SELBY RAILWAY.—The Government railway inspector (Capt. Coddington), having been engaged for two days in an inquiry into the causes of this accident, has made his report to the commissioners, in which he states that the evidence did not supply any explanation of the real cause of the accident, but only detailed its effects; yet, from a careful inspection of all the circumstances, he was enabled to form a generally correct opinion. It appears the train was drawn by two engines, and consisted of a passenger's luggage van, three fish waggons, eight passenger's carriages of different classes, and one fish wagon! The rails have been laid down seven years, and are only 51 lbs. per yard—totally insufficient for the greatly increased weight of the engines now in use. The driving-wheels of the two engines were not of the same size; that the oscillations of them were not equal, and, having acquired sufficient violence, bent the rail so suddenly, that it formed an angle; that the waggons, not being fastened closely, passed on, but a carriage behind, entering the angle, came to a dead stop, when all the remainder of the train was dashed against it with sufficient force to destroy and throw them all off except the two last. He seems to trace the cause of the passenger carriages suffering the most severely, from the loose and careless manner in which the fish waggons were coupled together, as, otherwise, they would have borne the brunt of the concussion, and saved the passenger carriages, perhaps, entirely harmless.

The Buckinghamshire Railway Company require, for the superstructure of their permanent way, 6000 tons of rails, and 4000 of chairs.

DISCOVERY OF A COAL MINE IN THE QUEEN'S COUNTY.—Within the last few weeks, a rich seam of coal, 8 ft. 2 in. in depth, has been discovered on the lands of Blandford, in the Queen's County, the property of John T. Bland, Esq., which, it is expected, will give much employment to the people of the vicinity, and be of great use to the country at large. Preparations are being made for working it without delay.

COOMBE VALLEY SLATE COMPANY

Capital £2000, in 1000 shares, of £2 each.—Deposit £1 per share.

CONDUCTED ON THE COST-BOOK SYSTEM.

OFFICE, No. 5, WHITEFRIARS-STREET, CITY.

BANKERS.—Messrs. Williams, Deacon, and Co., London.

The time having expired for the payment of the deposits on the first portion of the allotments, and intimation having been given by some highly respectable persons, that the time allowed was much too limited for the convenience of payments, the committee have, therefore, considered it prudent to extend the time of such allotments not paid upon due notice of which (by post) will be given to each person.

C. S. RICHARDSON, Secretary.

COOMBE VALLEY SLATE COMPANY.

Notice is hereby given, that a SPECIAL MEETING of the shareholders will be HELD in the Committee-room of the Office, 5, Whitefriars-street, City, on Thursday, the 8th of April, at One o'clock P.M., for the purpose of considering the best means of immediately proceeding with the works on the quarry, as well as for other business connected therewith.

Persons interested in this undertaking, who hold letters of allotment, are earnestly solicited to attend the meeting, as the future plan of operations, with a general description, will be laid before them.

C. S. RICHARDSON, Secretary.

PANTDRAINOG QUARRY SLATE COMPANY, Bangor.

(PROVISIONALLY REGISTERED.)

It having been represented by several parties, that owing to the state of the money market further time should be allowed for the payment of the deposits, notice is hereby given, that the bankers will continue to receive the deposits on shares which have been allotted until WEDNESDAY, the 7th day of April next, after which the letters not paid upon will be held as definitely CANCELLED.

J. H. MURCHISON, Sec. pro tem.

19, Essex-street, Strand, March 26, 1847.

Just published, Part I.

COMBUSTION OF COAL, CHEMICALLY & PRACTICALLY

CONSIDERED. With coloured plates.

By CHARLES WYLLIAMS, Esq.

London: Simpkin, Marshall, & Co., and J. W. Lewis—Birmingham: Wrightson & Webb.

STEAM COAL—WITHOUT SMOKE, as per experiments

made at her Majesty's Dockyard, Woolwich.

CAMERON'S COALBROOK STEAM COAL, AND EWANSEA AND LOUGHOR RAILWAY COMPANY. (Completely Registered and Incorporated.)

OFFICE.—2, MOORGADE-STREET, LONDON.

The directors are now prepared to supply steam ship companies, manufacturers, shippers, and others, with the company's steam coal, either at the company's wharf at Swansea, or in London. A statement, showing by comparative trial the superiority of this coal for steam purposes over every other, and a scale of prices, may be had on application at the company's office here, or at their wharf at Swansea.—March 18, 1846.

WILLIAM JOYCE, DESIGNER AND ENGRAVER

ON WOOD.

11, BOLT-COURT, FLEET-STREET, LONDON.

W. J. respectfully informs AUTHORS, BOOKSELLERS, PRINTERS, &c., that, having had long practical experience in DRAWING and ENGRAVING, of every variety—viz., Inventions of all descriptions, for Engineers, Machinery, Figures, Landscapes, Architectural and Perspective, Agricultural and Anatomical subjects; Specimen Books for Civil Engineers, Ironfounders, Lamp Manufacturers, Silversmiths, and every other Branch requiring Illustrations, he is enabled to speak with confidence, as to the satisfaction he could give with regard to promptness, accuracy, and economy.

Weekly and Monthly Publications Contracted for.

THAMES TUNNEL COMPANY.

The number of passengers who passed through the Tunnel in the week ending March 27, was 47,768; amount of money, £119 6s. 6d.

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday evening, March 27, 1847.

Bank Stock, 7 per Cent., —	Belgian Bonds, 4 1/2 per Cent., 94 1/2
4 per Cent. Reduced Ann., 97 1/2	Dutch, 3 1/2 per Cent., 88 1/2
3 per Cent. Consols Ann., 88 1/2	Brazilian, 5 per Cent., 91 1/2
3 per Cent. Ann., —	Chilian, 5 per Cent., 91 1/2
3 1/2 per Cent. Ann., —	Mexican, 5 per Cent., 91 1/2
Long Ann., 9	Spanish, 5 per Cent., 23 1/2
India Stock, 10 1/2 per Cent., 54 1/2	Ditto 3 per Cent., 24 1/2
3 per Cent. Consols for Acc., 88 1/2	Portuguese, 5 per Cent., 84 1/2
Eschequer Bills, 1000l. 3d., 1 dis. 2 pm.	Russian, 5 per Cent., 110 1/2

MINES.—The amount of business transacted in our home mines, does not appear to have been to any great extent, although we learn from the country, that much business had been done there. In general, we find the shares maintain former quotations, and the reports received from the mines are certainly of the most encouraging character. The rise in the standard has been a valuable boon to the copper mines; whilst the present market price for lead and tin has been of considerable influence in working those mines.

Since our last, we find Carn Brea meeting has declared a dividend of 2l. per 1000th share, payable 15th of April—making her 53d dividend of 2000l., or 106,000l. This mine, in 1825, was considered one of the "bubbles" of the day. Trethellan meeting has declared a dividend of 5l. per 120th share; whilst West Trethellan, held the same day, has made a call of 4l. per 120th share. Tresavean account meeting shows a balance in favour of the adventurers of 780l., being an increase of about 100l. upon the last two-monthly account.

Gwincar Consols has improved, and the price of shares advanced. Stray Parks have been much in demand during the week, and at advanced prices. West Seton, North Roskar, North Pool, Treviskey and Barrier, and Callingtons, have been sought after, but we do not learn that buyers have been induced to give the prices asked.

Transactions in the following mines have been done—viz.: Alfred Consols, West Providence, Andrew and Nangles, Herodfoot, Herodcombe, Gwincar Consols, Pentuan Wheel Mary, Albert Consols, Cleveland, Kirkcudbrightshire, Stray Park, West Seton, Wheel Treasury, Wheel Buckette, Drake Walls, West Fanny, Wheel Rose.

In the foreign share market, we find the principal transactions have been confined to only a few mines, but in two of them several large sales have been effected; we refer to the North British Australian Company (Kaw-aw), and Bolanos. In the former, the demand has been large, and we find them becoming quite a favourite investment; indeed, there is scarce an arrival from that quarter of the globe, but brings the produce from company's property, or advices of shipment. This week, we learn the arrival of "13 bales of fine wool, and 38 tons of copper ore," whilst other arrivals of the latter are expected daily. In Bolanos some large sales have been made, and we learn of buyers at still greater extent.

Since our last, we find that Australian shares have not maintained their former prices—but we have no doubt they will again advance on arrival of advices from the colony, which are daily expected.

RAILWAYS.—At the commencement of the week, the share market was particularly flat, and the fall in prices almost general; English and foreign were alike affected. On Wednesday and Thursday but little improvement took place; a tendency to decline was very evident, notwithstanding the operations generally were of less magnitude than usual. On the latter day, the settlement engaged the more particular attention of dealers; and, considering all circumstances at present effecting the share market, it passed off exceedingly well.

MEETINGS.—EASTERN COUNTIES: special meeting; at which resolutions were passed, approving the East Anglian line, proposed by the company. —Users: half-yearly meeting; the receipts had been 11,951l., and expenses, 7468l., leaving a profit of 11,013l.; a dividend of 1l. per share was declared.—TAFV VAL: for the purpose of considering the expediency of appointing a resident director for Cardiff, who would be required to devote all his time and services to the concerns and interests of the company; and also for the purpose of considering whether it would be desirable to increase the present rate of remuneration to the directors, which at present stood at 500l. per annum; the first resolution was agreed to, but the director was not named; and on the second, the remuneration was increased to 1000l.—WEAR VALLEY, BISHOP AUCLAND, and WEARDALE LINES: special meetings of these companies were held at Darlington, on Wednesday, when drafts of bills for enabling the Wear Valley Company to purchase or lease the Bishop Auckland and Weardale, the Weardale Extension, the Wear and Derwent Railways, and the Shildon tunnel, and the latter companies to sell the same, were approved of. Mr. Frews said, 3d. per ton was all that was charged the Great North of England Company for coal passing through the tunnel, and he did not see any reason why coal that was sent seaward, as was the case with that sent from the Black Boy Colliery, should be charged 5d. per ton, or at a higher rate than land sale coal. The chairman said, the question would be discussed before the Parliamentary committee.

The railway tunnel under the town of Lewis, was finished on Wednesday last.—That portion of the Newcastle and Berwick line, from Berwick to Chastell, was opened on Monday last.—The Eastern Counties Joint station, at Stratford, was opened on Thursday last; this company, on the same day, started a fourth-class train of open carriages at 4d. per mile.

At Messrs. Lamond's sale on Tuesday, business was exceedingly dull, and participated in the general depression. Shropshire Unions had a rapid decline.

HULL, THURSDAY.—We have had another dull week in shares, without any apparent reason, beyond the operation of causes previously in existence.

RAILWAY TRAFFIC RETURNS.

From these returns, it will be seen, that the amount of traffic for the last week, on nearly 2730 miles of railway, was 139,969l., thus accounted for:—66,933l. for the conveyance of passengers only, 49,384l. for the carriage of goods, and a remainder of 23,112l. for passengers and goods together, not respectively apportioned; being an increase over the corresponding week of last year of 15,936l., when the mileage was about 1,930.

Name of Railway.	Lgh. Rwy.	Present actual cost.	Last Div.	Traffic Returns.	
				1847.	1846.
Arbroath and Forfar.....	15	£142,900	5 p. c.	—	£180
Arbroath and Birkenhead.....	15	650,298	5	623 0 0	529
Arbroath and Drogheda.....	35	680,890	5	708 8 2	604
Arbroath and Kingstown.....	6	349,736	5	505 15 11	678
Arbroath and Arbroath.....	10 1/2	154,323	5	253 8 6 1/2	297
Arbroath and Lancashire.....	28	914,417	—	736 0 0	—
Arbroath and Northern Counties.....	18 1/2	6,513,026	7	9047 11 10	7077
Arbroath and Eastern Union.....	17	227,253	1	489 0 0	—
Arbroath and Glasgow.....	46	2,112,126	8	3609 6 4	2823
Arbroath and Glasgow, Paisley, and Ayr.....	53	1,567,281	7	2319 0 0	1859
Arbroath and Glasgow, Paisley, & Greenock.....	23	829,437	7	1004 0 0	466
Arbroath and Great Southern and Western.....	26 1/2	1,343,718	—	1160 0 0	—
Arbroath and Great Western.....	24 1/2	6,685,605	8	16510 0 0	16619
Arbroath and Ipswich and Bury.....	26 1/2	303,768	—	442 0 0	—
Arbroath and London and North Western.....	27 1/2	16,042,004	10	35428 0 0	34381
Arbroath and London and Blackwall.....	4	1,102,717	11	618 0 0	750
Arbroath and London, Brighton, & South Coast.....	11 1/2	1,109,667	7	6318 0 0	3292
Arbroath and London and South-Western.....	127	2,578,789	9	6545 17 48	5617
Arbroath and Manchester and Leeds.....	117 1/2	5,036,281	8 1/2	7410 0 0	5702
Arbroath and Manchester, Sheffield, & Lincolnsh.....	49 1/2	1,633,231	5	1828 0 0	1593
Arbroath and Midland Company.....	32 1/2	7,562,274	7	12954 0 0	14823
Arbroath and Newcastle and Berwick.....	9	1,184,079	8	746 0 0	—
Arbroath and Newcastle and Carlisle.....	65	1,184,080	8	2144 0 0	1666
Arbroath and Norfolk.....	70 1/2	1,159,689	7	1860 0 0	1200
Arbroath and North British.....	72 1/2	1,459,958	—	1485 0 0	—
Arbroath and North Devon.....	30	435,014	3 1/2	534 0 0	549
Arbroath and Shrewsbury and Chester.....	15	354,946	—	410 0 0	—
Arbroath and South Devon.....	30	1,061,383	5	976 0 0	—
Arbroath and South-Eastern.....	140 1/2	5,733,184	8 1/2	6831 17 8	5568
Arbroath and Taff Vale.....	30 1/2	888,411	6 1/2	1156 0 0	1158
Arbroath and Ulster.....	28	355,353	5 1/2	778 0 0	646
Arbroath and York and Newcastle.....	162 1/2	1,713,217	9	7846 0 0	6077
Arbroath and York and North Midland.....	162 1/2	2,483,256	10	5645 0 0	4909

NOTICES TO CORRESPONDENTS.

It will at all times save much trouble, and frequently considerable delay, if communications are simply directed—
To the Editors,
Mining Journal Office,
26, FLEET-STREET, LONDON.

Also, to avoid trouble, Post-Office Orders should always be made payable to WILLIAM SALMON MANSSELL, as acting for the proprietors.

DR. CHANNY'S IMPROVED SAFETY LAMP.—Dr. Channy has intimated his intention of forwarding one of his lamps to our office, for the inspection of parties interested: when it reaches us, we shall be happy to attend to Dr. C.'s request, and exhibit the lamp to all inquirers.

"An Ironmaster" should file the Journal, as he receives it—he will find the volume of much use for reference. We will obtain the information he requires, and publish it in an early Number.

Stratification.—In our "Mining Notabilia" of last week, under the head of Marke Valley, for stratification of the ore, &c., read stratification of the country.

A description of the Barrow Viaduct, on the Irish Great Southern and Western Railway, appeared in the Journal of the 6th of March.

THE MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all the news agents, at the Royal Exchange, and other parts of London.

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, APRIL 3, 1847.

In presenting our readers with the usual quarterly return of the sales of copper ores in Cornwall, it is gratifying to find, that, on the quarter ending 25th March last, there is an evident improvement—the return for the previous quarter having been 35,079 tons, producing, in money, 191,197. 9s.; while, on that just ended, it is 33,192 tons, producing 194,499. 7s. 6d.—showing an improvement of 3302l. on a diminished quantity of ore of 1887 tons. The quantity of ore raised has been nearly alike in proportion in both quarters—the above deficiency in the latter having arisen from 11 ticketings only having taken place; while, in the former, there were 12.

An improvement has also taken place in the standard—the average of the quarter, ended 25th Dec. last, having been 101. 13s., on a produce of 8 $\frac{1}{2}$; while that of the last quarter was 105. 6s., on a produce of 8 $\frac{1}{2}$; the average price also, of the former, was but 51. 9s.—the one just ended 51. 18s. 8d.—The following are the quantities purchased by the smelting-houses—viz.:

Mines Royal Company	2298	£14,361 6 5
English Copper Company	4870	27,069 15 3
Vivian and Sons	6805	35,895 13 1
Freeman and Co.	4011	23,654 16 5
Greenfield and Sons	4612	28,333 5 8
Crown Copper Company	156	841 7 2
Sims, Williams, and Co.	3782	20,579 12 0
Williams, Foster, and Co.	6588	42,563 10 6
Total	Tons 33,192	£194,499 7 6

An extraordinary decrease has taken place in the sales of ores at Swansea in the past quarter. For the quarter closing the year 1846, we had to notice a reduction, as compared with the previous one, of 12,155 tons, and in money 123,791. 19s. 6d.; the quarter just ended shows a still further falling off of 4555 tons, and money 55,146. 4s.: the total of sales for the first quarter of 1847 being 8850 tons, producing 122,234. 7s. 6d.—the last of 1846 having been 13,405 tons, producing 177,380. 11s. 6d. The former quantity was purchased by the several smelting companies, as follows—viz.:

English Copper Company	Tons 1594	£20,616 6 6
Freeman and Co.	535	8,856 6 0
Greenfield and Sons	1671	25,459 13 0
Crown Copper Company	16	80 4 3
Sims, Williams, and Co.	1072	18,858 1 6
Vivian and Sons	1772	18,166 16 6
Williams, Foster, and Co.	2199	30,146 19 9
Total	Tons 8850	£122,234 7 6

The following are the produce of the principal foreign mines during the quarter—viz.: Australinn, 1675 tons—25,126. 4s. 6d.; Cobre, 2041 tons—26,614. 14s.; Cuba, 826 tons—5052. 1s. 6d.; Chili, 1442 tons—36,751. 8s.; Santiago, 251 tons—3759. 11s. 6d.

The Directors of the VAN DIEMEN'S LAND COMPANY seem to be extremely liberal in their proposals to the more respectable sort of emigrants who may select the lands of this colony. The chairman signified, at a late meeting, that to a man of agricultural knowledge and energy, possessing from 200l. to 300l., the company would advance an equal sum if required, besides lending him bullocks, sheep, and implements of industry. Considering that the interest for the loan of money in the colony is from 10 to 12 per cent., and that the climate is extremely healthy, there is no doubt that these terms will prove attractive and advantageous to emigrants from Great Britain and Ireland. We refer to the proceedings at the late meeting in another part of this Journal.

RAILWAY WHEEL TIRES—IMPORTANT EXPERIMENT.—In consequence of the late fatal accident, which took place on the Great Western Railway, near Southall, by the flying off of a tire of one of the wheels of the engine, great efforts have been made by the Great Western Railway Company, so to secure the tire as to prevent it separating from the rim of the wheel over which it is laid, and to obviate, as far as is practicable, all risks of future accidents from broken tires. The present tires are patented steel ones, which are merely held on the wheel by contraction of the metal, but without any fastening; and not feeling satisfied with the slender and uncertain security of the rivets recommended at the Southall coroner's inquest, by Messrs. Brathwaite and Mr. Connell, the company have caused experiments to be tried with a tire fitted on a new principle, the invention of a gentleman connected with the company. The experiments which have been made are highly satisfactory, the tire having, from its peculiar mode of fastening, successfully stood the severe test of being cut in two, in two places; and in that state has been run at a high speed with heavy loads, without the smallest perceptible alteration of its position. Should this invention stand the test of further trials, no doubt, it will be generally adopted on railways, and will tend greatly to increase the feeling of security in railway travelling.

BIRMINGHAM AND OXFORD JUNCTION RAILWAY—THE BATTLE OF THE GAUGES.—This action (Mozley v. Alston), arising out of the contest between the London and North Western and the Great Western Company, came before the Vice-Chancellor of England, on Wednesday last, in the form of a petition, praying for an injunction to restrain the directors of the company from acting in that capacity; and that the common seal, papers, and books of the company should be given up to persons whom the bill represented to be the lawful directors. The case involves some curious points, and has been thought of sufficient importance for the appointment of a committee of the House of Lords, to inquire into certain allegations affecting the North Western Company. In the Mining Journal of the 20th ult. will be found an explanation of the position of the two companies throughout the affair, and which now awaits the decision of a court of equity. Mr. Fittroy Kelly opened the case in support of the demurrer, and contended that, if this bill could be maintained, a separate bill, on the same ground, might be filed by every shareholder in the company, amounting to some thousands. He quoted cases in support of his view of the question, and was followed, on the same side, by Mr. Stuart, Mr. Holt, and Mr. Lake Russell. Mr. Bethell opened the case in support of the bill, and, after some introductory remarks, said, the bill was filed as against rebels who held their sovereignty in captivity; and went through the history of the company, from the meeting held on the 13th March, 1846, for increasing the number of directors. He contended, that the parties complained of as directors could not be prevented from committing suicide on the company, unless restrained by that court. Mr. Parker, Mr. Wilcock, and Mr. S. Smith, are to follow Mr. Bethell, and the case stands adjourned to the 15th inst. Although the case itself is of particular interest, and the decision is looked forward to with much anxiety, the arguments themselves are dry and uninteresting.

IMPORTANT DISCOVERIES DURING THE LAST YEAR.

ETHER—GUN-COTTON—SMELTING COPPER BY ELECTRICITY.

We apprehend that there can be no doubt, that the year 1846 will be memorable to the end of time, for the remarkable extensions, or new applications, of human knowledge, which will come before future historians, as rendering illustrious its narrow limits. Most evident is it, that we are now living in the days predicted by the Hebrew prophet—when "many shall run to and fro; and knowledge shall be increased."

1. Foremost among these may be placed, the use of ether, inhaled for the facilitating surgical operations. Like all other appliances of this kind, it meets with failures, and even with evil results, in a few cases; but, for one fatal result, and five failures, we have five hundred instances of vast benefit—in many of which, beyond all doubt, lives have been saved, which would otherwise have been lost. Without describing it as infallible, or in all cases safe, or to be relied on, there can be no doubt that this discovery has conferred vast benefits on mankind.

2. The substitution of a new explosive material—the gun-cotton—in place of gunpowder, is another remarkable event. The extent of its utility is not yet ascertained. Whether it will be largely adopted in warfare, is still a point on which no decided opinion has been formed; but of its great utility in all blasting and mining operations, not the slightest doubt can exist. It is both cheaper and more powerful than gunpowder; and the absence of smoke gives it a decisive advantage. There can remain no question, that in all works of this description, the new agent will rapidly supersede the old one.

3. The third discovery of 1846 is, perhaps, even of greater importance than either of the former—we allude to the lately-patented process for smelting copper by means of electricity. The effect of this change will be quite prodigious. It produces, in less than two days, what the old process required three weeks to effect; and the saving of fuel is so vast, that in Swansea alone, the smelters estimate their annual saving in coals at no less than five hundred thousand pounds! Hence it is clear that the price of copper must be so enormously reduced, as to bring it into use for a variety of purposes, from which its cost at present excludes it. The facility and cheapness of the process, too, will enable the ore to be largely smelted on the spot. The Cornish mine proprietors are anxiously expecting the moment when they can bring the ore which lay in the mine yesterday, into a state to be sent to market to-morrow; and this at the very mouth of the mine. In Australia, also, the operation of this discovery will be of the utmost importance; 10,000 tons of copper ore were sent from Australia to England last year, to be smelted at Swansea; and the result was only 1600 tons of copper. But Australia, in future, will smelt her own copper, by a 36-hours' process—saving all this useless freight of the 8400 tons of refuse; and saving also the cost of the old and expensive process. In a very few years, Australia will send to market more copper than is now produced by all the rest of the world; but if our future penny-pieces are to bear any proportion to the reduced cost and value of the metal, they must be made of the size of dinner-plates.

PREVENTING AND REMOVING INCORUSTATION IN STEAM-BOILERS.

[Specification of patent granted to Maximilian François Joseph Deffense, Esq., late of Paris, but now of Regent-street, in the county of Middlesex, for improvements in preventing and removing incrustation in steam-boilers.]—*Newton's London Journal.*

This invention consists in preventing and removing incrustations in steam-boilers, by the addition to the water used therein, of a certain mixture, which acts on the precipitable matters contained in the water in such a manner as to prevent their forming any incrustations on the interior of the boiler, and which will also remove any incrustations that may have been previously formed. The mixture is termed by the patentee the "antipetrifying mixture;" the materials composing it are: first, dry tannic or gallic extract, obtained from the bark of oak and other trees, or from gall nuts or roots, or from any other substances containing the same; secondly, hydrate of soda, or soda deprived of its carbonic acid; thirdly, muriate of soda; and fourthly, subcarbonate of potash. The proportions in which these ingredients are used, and the quantity of the mixture employed, will vary with the greater or less impurity of the water, and according as the boiler is stationary or locomotive. If the boiler is stationary one, and it is fed with fresh water, the amount of antipetrifying mixture required for 336 hours' consumption per horse-power may be made by mixing together 12 ozs. of muriate of soda, 24 ozs. of hydrate of soda, 2 drachms of the dry tannic or gallic extract, and 4 ozs. of subcarbonate of potash: for locomotive boilers, travelling on an average about 140 miles each day, the quantity of the mixture per horse-power is increased one-fifth. If the water should be brackish, or a mixture of salt water and fresh (such as the water of tidal rivers), the patentee omits the muriate of soda, and uses 6 ozs. instead of 24 ozs. of hydrate of soda, and 5 drms. instead of 2 of the dry tannic or gallic extract; the mixture is also prepared in this manner when sea-water is used in the boiler. The patentee prefers to introduce the mixture into stationary boilers, in quantities sufficient for two, three, or more days; but locomotive and marine boilers are to be supplied daily with a portion of the mixture, corresponding with the amount of duty to be performed. The mixture may be introduced into the boilers of stationary engines, and into either the feed-tanks or boilers of marine engines; but for locomotive engines, it is better to add a portion daily to the water in the tender. The patentee claims the employment, for the prevention and removal of incrustations or petrifications in steam-boilers, of the antipetrifying mixture above described, and of any analogous mixture containing for its principal or essential ingredients fixed alkaline matter combined with tannic or gallic extract.

COAL IN SOUTH AFRICA.—The attention of the Colonial Government has been directed to the coal fields in the colony of the Cape of Good Hope. The beds of coal which were discovered some years since at Colesberg, are not available, owing to their distance from the sea-coast; but recent information goes to show that the coal-fields of the new settlement at Port Natal promise to be the means by which steam navigation is to be extended in the southern hemisphere. The following official notice, issued from the Colonial-office, at Natal, will direct the attention of the colonists to the value of this mineral product:—"Inquiries having been addressed to this office by parties interested in steam navigation, relative to the quantity and price of native coal, to be obtained at Port Natal, his honour the Lieutenant-Governor requests that landed proprietors who may have found coal, of quality equal to that brought to this market from the northward, in situations more favourable for conveyance to the port, will forward specimens of the coal to this office." The Lieutenant-Governor will also be glad to receive information upon this subject from any one disposed to furnish it.

THE REPUBLIC OF CHILI.—We have often had occasion to remark on the employment of British wealth in Mexico, and other parts of South America, and to regret the millions which have been entirely lost; this, in a great measure, has arisen from their persevering in working the old, deep, and worked out mines, when, by a little research, new veins would, doubtless, be discovered of immense value, and easily worked. The metalliferous wealth of Chili, for instance, has never been properly appreciated; while so many advantages are offered by exploring the Andes, which, according to the indefatigable researches of Humboldt, Puelin, and others, are known to abound with silver and other rich ores—the former often in a virgin state. We are informed, on good authority, that several French mining adventurers are on the point of taking their departure from Havre, to proceed direct to Valparaiso, for the express purpose of making explorations in search of mineral riches, to enable them to make an authentic report of the metalliferous resources of Chili and other portions of the Andes, previous to the formation of a company well supplied with capital for working new mines in those districts. No difficulties whatever exist in obtaining concessions from Government, when it is properly ascertained that ores exist, and every assistance is offered to parties willing to embark in the enterprise. The land may be had for next to nothing, and the dues so trifling as to be scarce worth noticing, while the adventurers will be under the most especial patronage and protection of the State.

RAILWAY CURVES.—Mr. John Weale, of High Holborn, has just published a pamphlet by Mr. William Hill, land surveyor, entitled, *An Essay on the Theory and Practice of Setting-out Railway Curves*. There has not, we believe, been any particular formula adopted, or published, for this portion of railway construction: in the novelty of the railway system each surveyor worked on a theory of his own, and laid out his curves according to the requirements of the line, and the nature of the land—of course, observing a proper geometrical figure, in every sweep from the straight line. The author informs us, that these notes were made for private practice; but, finding them of great utility, he was induced to publish them, with a view to their being interesting and useful to others. In setting out, he descends to the very elementary principles of the subject; and there are, doubtless, many in the profession to whom this little work will be of advantage, as conveying a clear conception of the truest and shortest methods of laying out, with mathematical precision, the unavoidable sinuosities of railways.

PROGRESS OF FRENCH MINING INDUSTRY.

[FROM OUR PARIS CORRESPONDENT.]

In a recent speech, in the Chamber of Deputies, M. Guizot announced that the Government intended shortly to present a bill relative to the tariff. Is it proposed to recommend a general revision of the Custom-house duties similar to that of Sir Robert Peel? Is it intended to make merely a few paltry reforms? Above all, what is to be done with the iron and coal duties, the keystones of the monopolist arch, the most burdensome and most unjust of all the taxes paid by the French people?

The Ministry of Marine advertised in the newspapers of yesterday, that on the 29th of April it will receive offers of contracts for the supply to Cherbourg of 7000 kilogrammes of yellow copper, 600,000 kilogrammes of ordinary cast-iron, 900,000 kilogrammes of best of cast-iron, and 165,000 kilogrammes of iron *laminé*; to Brest, of copper and iron necessary for three years; and to Rochefort, of 50,000 kilogrammes of French cast-iron. This is the first time I have ever noticed such advertisements inserted in the newspapers. If it were not too vain, I should be tempted to suppose that they have been so inserted, in consequence of the remarks of the *Mining Journal* on the folly and injustice of not giving the widest possible publicity to such things—but, whatever may be the cause, the innovation is deserving of praise. Let the Marine Department go a step further; and when it wants English coal and English cast-iron, make the fact known in English newspapers. If it be really desirous of doing its duty to the public, of showing no favour to a little knot of persons, it cannot fail to cause such advertisements to be published in England.

The Direction of Artillery, at Paris, will receive contracts on the 12th and 15th April, for the supply of 183,000 kilogrammes of Russian copper, 184,000 kilogrammes of Cornwall tin, and 180,000 kilogrammes of pig-lead, for the foundries at Strasbourg, Douai, and Toulouse. In addition to the contracts noticed above, the Marine Department will receive others on the 29th of April, for the supply of 6,000,000 kilogrammes of coal, 50,000 hectolitres of small coal for Cherbourg; and on the 17th of April, 12,000 kilogrammes of iron *laminé* for Lorient.

The Campagne des Houillères de Mont Chanin will hold a general meeting in Paris on the 14th of April, and the payment of the interest of the second quarter of 1846 will commence on the 15th of April.

The French Government pays upwards of 25,000l. annually in salaries to the engineers and employés of the department of mines in the Ministry of Public Works.

Some months ago, I informed you that the opening of the atmospheric branch of the St. Germain Railway had been greatly delayed, in consequence of the neglect of the ironmasters to deliver the tubes, which they had contracted to supply. Your zealous contemporary, the *Moniteur Industriel*, was pleased to assert that all my statements on the subject were false; and it applied the same qualification to the statements of M. Leon Faucher, which I had quoted. To prove to you that my assertions were literally and strictly true, I cite a few lines from the report of the directors of the railway, which was read at a general meeting of the shareholders on the 17th inst. The report may be found at length in the *Journal des Chemins de Fer* of the 20th.—"The branch (say the directors) could not be opened for circulation as soon as we had expected, on account of the delays in the delivery of the tubes. According to the stipulations of the treaties into which we entered with the principal metallurgical establishments of France, the tubes ought to have been delivered between June, 1845, and March, 1846, so as to enable the line to be opened on the 1st of May following. The delivery not having been commenced long after the period fixed for the delivery of the first portions, we applied to the Minister of Commerce on the 7th of December, 1845, for the authorisation to import foreign tubes, on paying, as import duty, the difference between the price of English tubes, and that which we had agreed to pay to the contractors. The order would have consisted of 850 tubes of 68 centimetres in diameter, and 1800 tubes of 38 centimetres. The Minister of Commerce replied, 'that it appeared, from the inquiries he had made, that the French establishments were able to supply all the tubes of small dimensions; and that of the large tubes (500) could be delivered in time—so that it would only be necessary to import 350 tubes from abroad to enable the branch to be opened at the period appointed.' As to the duty to pay, he fixed it at 44 fr. the 100 kilogrammes—thereby imposing on tubes the same duty as is levied on detached pieces of machines. We immediately replied to the Minister of Commerce, that the conditions on which this permission was accorded were such that we could not accept them—that duty being equal to 150 per cent. of the price of the tubes in France, which, according to our treaties, was 204 fr. the 100 kilogrammes. If we had accepted the permission, we should have subjected our contractors to a loss of 230,000 fr. for a small portion of the whole supply; and this sacrifice, great as it was, would have given us no guarantee with respect to the delivery of the rest of the tubes. We, therefore, insisted on our first demand and invoked precedents, which proved that, in analogous cases, the Government had acted in the manner we begged it to do. No reply having been made to us, we had to consent to a prorogation of the period of delivery. According to these new arrangements, the large tubes necessary were to have been delivered by April, 1846, so as to allow them to be laid down by the 1st of May—the remainder were to have been delivered in such portions as to enable the whole to be supplied in the month of June following; but these new arrangements were no better kept than the preceding ones. The delivery of the large tubes was only completed in December last. As to the 1800 small tubes, which, according to the arrangement made to the Minister of Commerce, were to have been delivered before the month of May, 1846, we had only received 76 at that period; and the remainder will probably not be delivered before the end of 1847. In fact, of the tubes ordered in March, 1845, for a distance of 8350 metres (about a mile and a half), we have only received sufficient for a distance of 3327 metres." Does not this prove all that I asserted? And doesn't it prove triumphantly the infamy and absurdity of the ironmasters' monopoly? The report declares that the delays in question have caused heavy losses to the company; and that it is their determination to bring an action against the contractors for their scandalous neglect to fulfil their agreements. Every honest man must wish that they may obtain enormous damages.

The *Journal des Chemins de Fer* states, that 40,000 chairs, and 10,000 rails, have recently been delivered on the Dijon and Chalon section of the Lyons Railway; and that that section will probably be opened for traffic in the course of a few months. The same journal, referring probably to your articles on the scarcity of slates in England, asks why zinc is not employed instead of slates or tiles? In Paris, that article is now generally employed for covering in houses and buildings; and it bids fair shortly to supersede the use of slate altogether.

A letter from St. Dizier of the 25th, says—"Affairs languish, and are treated with difficulty; few orders for iron arrive. If this state of things continues a little longer, prices must decline. Nothing has been done for some time in *fontes blanches*; they are offered at 399 fr. for large lots."—*Paris, Wednesday.*

BELOUIN.—In February last, this country imported 388 tons of coal from France, and 11 tons from other countries; in January and February, the importations were 921 tons from France, and 32 from other places. The exportation in February was 98,144 tons to France, 12,705 to the Netherlands, and 2359 to other countries; in January and February, it was 180,060 to France, 18,257 to the Netherlands, and 4011 to other countries. In February the exportations to France of cast-iron *en gueuses*, and cast-iron *épures*, was 7,723,784 kilogrammes; and in January and February, 9,895,605 kilogrammes. This was nearly one-third more than in the same period of 1846, and more than double that of 1845. The Zollverein was the only other place to which Belgium exported cast-iron. No exportations of rails were made either in January or February. Of *fonte courée* exportations were made chiefly to the Netherlands, and in much smaller quantity to the Zollverein; the total quantities for January and February were 25,607 kilogrammes, showing a considerable decline compared with the same period last year, and a still greater decline compared with 1845. The exportations in January and February of *ouvrages de fer battus* amounted to 123,014 kilogrammes, being a great increase over those of 1846 and 1845. In the same period, 795,146 kilogrammes of rails were exported, principally to Holland, Brazil, Austria, and Turkey; an increase over the same period of 1846, but a decline over that of 1845. The exportation of machines and mechanical pieces shows an increase; it was 155,608 kilogrammes. The greater part was taken by the Zollverein, Holland, and Austria; Spain took some, but France little. In detached pieces of machines, there was an increase of nearly two-thirds over 1846—the quantity was 111,745 kilogrammes, of which the Zollverein took nearly one-half, and Austria more than one-sixth. Of zinc, the ex-

portion was 432,987 kilogrammes, a slight decline compared with 1846 and 1845; almost all went to France. Of nine *lamines*, the exportation was 151,823 kilogrammes, being less than in the two preceding years. England took 49,443 kilogrammes, the United States 55,521 kilogrammes, but none were sent to France.

In a previous letter, it was stated that contracts were to be received for the supply of rails, &c., for the Brabant Railway. The contracts were accorded the other day, on the receipt of written offers in the usual form. One lot, of 100 tons, was taken by the Société du Couillet, at 350 fr. the ton; the second, of 11,000 tons, at 350 fr., by M. Pastor, of Seraing; a lot of 250 tons of chairs, was taken by M. Deschene, of Liege, at 199 fr. the ton; and another lot of 250 tons, at 196 fr.

The Company of the Mines of Blegberg is to meet at Brussels on the 15th of April. The Company of the Furnaces and Coal-pits of Marcelline and Couillet are informed, that from the 1st to the 15th of May, they may receive two new shares of 500 fr., for every one of 1000 fr., of the old emission, pursuant to the resolutions adopted in March, 1846. The Company of the Hauts-Fourneaux de Monceau will pay 120 fr. dividend per share from the 1st of April. The meeting of the Charbonnages Belges Company, which had summoned in Paris, is to be held at Mons, on 2d of May, in compliance with the wishes of the majority of the shareholders.

In 1837, the expense to the Government of the Department of Mines was 89,410 fr.; and, in 1846, it had increased to 172,000 fr. The Government demands a further increase for 1847; but it is not expected that the Chamber will accord it.

On the State Railway, 41,000 rails have to be replaced—13,000 of which must be supplied immediately. The expense of these 13,000, with the chairs, &c., is estimated at 900,000 fr.—Brussels, March 30.

SILVER AND GOLD MINES OF THE NEW WORLD.—No. VIII.

Worked in an incomplete and barbarous manner, the mines of Pisco yield commonly at present as much as 300,000 marks (69,000 kilogrammes) of silver; including smuggling, it is nearly 640,000. The Spanish Government, perhaps on account of the great distance, undertook and accomplished less for the promotion of Peruvian industry than for that of Mexico. This cause has not a little contributed to confine the metallurgical development of Peru. I have already alluded, in Mexico, to the magnificent road which, from Vera Cruz, arrives at Perote, the summit of the Cordilleras: it is one of the fruits of the colonial system; but under the system since Independence, it has not only not been prolonged, but has been half destroyed. In Peru the conquistadores found roads established by the Incas from Cuzco, their capital, to Quito, near 500 leagues in length, over hill and valley—they were comparable to the finest Roman roads. Similar communications, directed from the mines to the coast, would have changed the face of the country in general, and the working of the mines in particular. The Spaniards, after having allowed the roads of the Incas to become ruined, did not establish new ones; but, at least, these constructions of the first masters of the country, of which the ruins may be seen in a hundred places, and which astonish the European, show what might be done. For the population it is a remembrance, and for the government an example, which will remain as a crushing reproach, until one shall arise to profit by it.

Taking the figures supplied by M. de Humboldt, which come down to 1804, and taking to complete, and, in certain parts, modify them,* the information furnished by M. Jacob, by Mr. McCulloch, in his *Dictionary of Commerce*,† and by some travellers who traversed the country, I find that the production in precious metals of the Peruvian Andes, comprising all the mines of the former vice-royalties of Peru and Buenos Ayres, or of the two modern republics of Peru and Bolivia, amounted in the minimum, to 1st January, 1810, to 2,403,888,000 piastres, of which 2,197,803,000 represented 53,703,316 kilogrammes of silver metal, and 206,085,000 piastres represented 304,800 kilogrammes of gold; to 1st Jan., 1846, the amount was 2,608,700,000 piastres, of which 2,380,300,000 in silver, and 228,000,000 in gold—making, in French money, 14,088,000,000 francs, of which 12,925,000,000 fr. in silver, and 1,163,000,000 in gold, or 58,163,000 kilos. of silver, and 337,725 kilos. of gold. Thus the mines of the Peruvian Andes yielded less than 1,000,000,000 fr. than those of Mexico. The proportion of the two metals is 1 kilogramme of gold against 170 in silver; and in value, at the rate of French money, of 1 fr. in gold against 11 fr. in silver.† At the commencement of the nineteenth century, the annual yield of the Peruvian Andes was 251,242 kilogrammes of silver, of which four-sevenths came from the vice-royalty of Peru, and three-sevenths from the mountains depending upon the Government of Buenos Ayres; and of 1500 kilogrammes of gold, of which about 900 should be attributed to Peru, and 600 to the other division of the metallic country. At present Peru, properly so called, yields, according to the statement of the English consul, Mr. Wilson, quoted by Mr. McCulloch, 5,210,000 piastres. In apportioning this yield between the two metals, in the relation which appears to have been that of the commencement of the century—that is to say, one piastre of gold of nine—there will be for the present production 4,631,000 piastres, or 113,158 kilogrammes of silver, and 479,000 piastres, or 708 kilogrammes of gold.‡

VII. POTOSI.

Among Peruvian mines, those of Potosi merit particular mention.

The mines of Potosi are those of the whole world which have yielded the most silver, and which have had the greatest part in the variation in the prices of commodities in Europe. Discovered in 1545, they yielded, 11 years after, in 1556, 89,050 kilogrammes of pure silver, representing 19,790,000 fr. in French money; and 30 years later, according to the most moderate valuation, 184,240 kilogrammes of pure silver, or 40,941,000 fr.—a figure at which they remained, without declining more than a third, for a long period of time. Never had a silver mine given so much, and never has such a thing been seen since. Yet we do not take into account all that got into circulation, without passing by the Mint of Potosi, in smuggling, as lingots, in order to elude the duties established for the profit of the Crown. This M. Humboldt calculates, on the whole of the working, at one-fourth of the declared produce, and, at the period of which we speak, it was yet greater. Thus, the yield of Potosi, at the lowest estimate, was, about 1585, upwards of 50,000,000. To duly appreciate the importance of this, we must recur to the period at which Potosi came to astonish the world. Then the precious metals were extremely rare, and, in consequence, their relative value was much greater than at present. After the prices, compared with coin, silver was worth in Spain more than at present, in the proportion of 62 to 10. These 50,000,000 fr. must then have produced on the minds of the Spaniards the same effect as 300,000,000 would at this day. There was not, perhaps, before the discovery of America, nor for 40 years afterwards, a quantity of pieces of money superior to what Potosi yielded in a single year. Less would have sufficed to give to all Spaniards the passion for mines, and to accredit the fable of the El Dorado.

All the treasures drawn from the mines of Potosi, which amount to 6,000,000,000 or 7,000,000,000, have been abstracted from a single mountain, named the *Huata Potosi* (the Great Potosi), which for euphony has been christened the *Potosi*. This mountain, situated in the midst of the mountains of Peru, at about 100 leagues, as a bird flies, in the interior of the country, and 4865 metres in height above the ocean, arises, isolated, like a sugar loaf, in the midst of a vast plain, suspended on the brow of the Andes, at such a height above the sea, that the apparent height of the mountain is only 945 metres. There have been worked in different stages 32 veins, which cut the rocky mass, without speaking of smaller metallic veins. It is surrounded for a great distance by a desert country, desolate, without vegetation, without cultivation. There pass few days in the year without snow, hail, or rain, even at the bottom of the plain. An Indian conductor of Lamas Diego Hualea, who had laboured in the mines of Potosi, which were worked in the time of the Incas, discovered the silver ore in 1545. At the commencement the profits were such, that the population ran from all parts of these melancholy regions, and a town of two

leagues round was constructed, as if by enchantment; it is the town of Potosi, which, at the end of the sixteenth century, was as vast as it is now, and which counted, it is said, as many as 160,000 inhabitants. During the civil wars the population was 7000; but some years ago, after the re-establishment of peace, it had risen to 13,000.

At the beginning, the ore extracted was treated, after the fashion of the Indians, in little furnaces of clay or earth, called *huayras*, in which it was mixed with galena, or lead ore, the fire being excited by a current of natural air—a large quantity of metal was thus lost. Fuel being obtained with difficulty, wood was replaced with bushes. The richest ores, however, were only taken in hand, and in this mine, even more than in any other worked in the New World, they lay nearest the surface. Quite close to the light of day were found masses of ore, which, it is said, yielded at times one-third of their weight in lingots. The working was carried on with extreme activity. The number of furnaces that were illuminated every evening, on the flanks of the mountain, was at least 6000. It was a wonderful spectacle for new comers, to whom everything appeared fairy-like at Potosi, and the tales of the times speak of it with enthusiasm. The working was about to languish from the want of fuel, when a Spaniard imported to Peru the process of amalgamation, with which Medina had enriched Mexican metallurgy. This was in 1571. From that period the greediness of the adventurers, who, from the Peninsula, precipitated themselves on the New World, could satisfy itself amply, and powerful means were employed to organise labour on a grand scale. By a lucky chance, the salt necessary to the working was found to exist in the neighbourhood. Moving water was wanting to pound the ore, and effect the washing; but this difficulty was got over by bold constructions—barriers in stone were thrown across the mouths of the deep valleys of the Cordillera, in such a manner as to retain the melted snows and the rain; and this water was subsequently released, according to the wants of the moment. In 1578 the number of these reservoirs was at least 18, and had cost, at the lowest calculation, 22,000,000 fr. Fifty years later, the number of these gigantic reservoirs was increased to 32. They were arranged in such a manner as to empty themselves one into the other. The mouths of the mines, with which the mountain was pierced, was not less than 5000. Fifteen thousand Indians, dragged by the *mita* from the pleasant climate of the plain, sought the ores in the entrails of the earth; the same number of free Indians executed the labour of the workshops. Potosi became celebrated throughout both worlds, and even to this day it is the synonyme *par excellence* of riches.

After the first quarter of the seventeenth century, the production of the mines of Potosi began to decline. Still, at the end of the seventeenth century, it amounted to 78,920 kilogrammes, or 700,000 fr. in British money. At this period the contents of the ore diminished in a great degree; it scarcely equalled the Mexican ores of our days; but the mineral matter was still inexhaustible, and that was a compensation. The production underwent a further decline during the first half of the eighteenth century. In 1789 it rose to 89,828 kilogrammes, or 20,000,000 fr. (800,000L.) It became a little less during the last decennial period of the eighteenth century; but it declined during the insurrection of the colonies. Potosi, nevertheless, maintained the second rank among the silver mines of Spanish America and the rest of the world, and yielded nearly double of all the mines of Europe together. In 1799 the extraction is legally stated to be only 77,000 kilogrammes. During the first decennial period of the nineteenth century it was 61,000 kilogrammes. During the struggle for Independence, it was at one moment almost nothing. For 15 years it has varied from 18,000 to 22,000 kilogrammes.‡ This is without doubt, little regard being had to the former prolificness of these famous places; but it is still nearly the half of what was yielded by all the mines of Europe at the commencement of the present century.

[To be continued in next week's Mining Journal.]

MONMOUTHSHIRE CANAL COMPANY.—We have before us a pamphlet, published by Mr. Weale, Holborn, on the present state and future prospects of this company, in the form of a letter, addressed to the committee of management. It will be remembered, by parties interested in this property, that some three or four years since, some very strongly-written letters, by Mr. James Brown, appeared in the *Mining Journal*, reflecting on the management of the company—that gentleman is also the author of the pamphlet under notice, which is written in the best spirit and good feeling, evidently with a desire to render the property as remunerative as possible; for which purpose he has embodied a variety of considerations and suggestions for the future government of the undertaking, and the most economical and advantageous method of carrying out the line of railway from Newport to Pontypool. It contains a series of well-timed recommendations, with the statistical data on which they are founded, and is well worthy the perusal of every shareholder. We shall here make a few extracts, as showing the views of the author, which appear to us to be sound and judicious. His object is to improve the roads already in the possession of the company, and to make the new lines at such a cost, as will enable them, as carriers, to make good dividends on the capital expended, and to afford the reduction of freight dues on the rates allowed by the Act of Parliament. His subject is divided into the following heads:

—Uniformity of gauge, tram plates, and edge rails, keying the same, and different forms of rails, concluding with a plan for converting the company's common roads into a railway without hindrance or prejudice to the owners of other existing tram-roads, and to be of the same gauge as the Newport and Pontypool line—viz., 4 ft. 8½ in. There are several railway memorabilia in this essay, which are interesting. The different weights of rails used by different companies varies considerably—for instance, although the generality of the companies employ rails of 75 lbs., and some a little more, those on the Liverpool and Bury line are 85 lbs. per yard; Dublin and Cashel, 90 lbs.; Cheshire Junction, 92 lbs. The total outlay required relating the old and establishing the common roads as tram-roads, he estimates at 81,924l. 19s. 4d.; and, although such sum is undoubtedly large, it is shown that a much larger sum is risked in the requisite expenditure for locomotives, waggons, passenger carriages, turntables, and other costs, which, when completed on the old plan, may prove a decided failure—and thus sacrifice double the amount which would be required for placing the company, beyond all doubt, in a successful and profitable position. The carriage of iron and coal to Newport and Cardiff had increased as follows:—Iron to Cardiff, 1836 to 1840, average tons, 128,663—being an increase of 7½ per cent. over 1835. Iron to Newport, 1836 to 1840, average tons, 165,742—being an increase over 1835 of 7½ per cent. Iron to Cardiff, 1842 to 1846, average tons, 168,932—being an increase of upwards of 10 per cent. over 1841. Iron to Newport, 1842 to 1846, average tons, 194,838—being a decrease of 7½ per cent., as compared with 1841. Coal to Cardiff, 1836 to 1840, average tons, 213,538—being an increase of 20 per cent. over 1835. Coal to Newport, 1836 to 1840, average tons, 515,704—being an increase of nearly 5 per cent., as compared with 1835. The railway was opened in 1841, when, from 1842 to 1846, the average was 439,581 tons per annum, or an increase of 79 per cent. over 1841. The pamphlet is well worthy the perusal of the directors, and the suggestions it contains their most serious consideration.

ELASTIC TUBES FOR ATMOSPHERIC RAILWAYS.—We last week noticed a suggestion of Mr. A. T. J. Martin, of Penzance, for constructing elastic tubes of vulcanized India-rubber, strengthened by lateral wires, and observed, that we considered not only would it be an infringement on Clarke and Varley's resilient railway, but that the expense and destructibility of the material rendered the idea futile. We readily give insertion to Mr. Martin's reply, which will be found in another column; and also state, that in a communication received this week, Mr. Martin suggests two tubes of smaller diameter, laid along the centre, the openings being at the sides—so that the couplers of the pistons project horizontally, and which are fixed to the framework of the carriage. A broad timber rail is laid in the centre, on which flat iron bars are fixed; on these revolve two horizontal guide-wheels, and the wheels of the carriage are without flanges, but made wide enough to allow of lateral deviation. We think the same objection applies to this as to the one under notice in last week's Journal.

THE DIORAMA, REGENT'S PARK.—We had an opportunity of visiting this establishment, on Wednesday, to view the new pictures with which the season opens on Monday—one represents the interior of St. Mark's, Venice, painted by Mr. Diogee, from original sketches by M. Renoux; the other is a view of Tivoli, near Rome, painted by M. Bouton. They are both paintings of great merit; and the production of beautiful effects, by light and shade, is managed with consummate skill—indeed, the night service in St. Mark's, with the illuminated cross, the numerous congregation, and organ accompaniment, is one of the most beautiful representations we ever recollect seeing.

† In the course of this paragraph I have only indicated the quantities officially declared; but there ought to be added, according to the periods, a fourth, a fifth, or a seventh, on account of smuggling.

Original Correspondence.

HYPOTHESES ON IRON.

SIR,—I should have replied to "Ferrens" last week, but I was engaged in completing some experiments, which are calculated to throw a new light on our argument. The experiments I allude to have fully proved, that not only can hematite be deoxidized in the reduction of iron, &c., but lime, alumina, baryta, strontia, and magnesia, can also be deoxidized, or metallized; for, in many of the samples of iron I have examined, I find either one or more of the bases of the above earths—that is to say, in cast-iron I find calcium, aluminum, barium, strontium, and magnesium—fully proving that clay and lime, together with any other earthy matter of a like kind, is deoxidized. Nor must this be considered as so very surprising, when we reflect, that the most oxidizable metal we know—viz., potassium—can be produced from its oxide potash, by the action of iron at an intense heat—so that the reduction of the earthy metals I have already enumerated, can be very readily explained; moreover, none of the metals, as aluminum, &c., are near so oxidizable as potassium—so that their reduction can be more readily explained. The reduction of potash to the metallic state, is not a mere theoretical notion; for, some years since, all the potassium required by chemists, was manufactured by passing hydrated potash over intensely-ignited iron turnings, when hydrogen gas and potassium came over, and oxide of iron remained. I must here make a remark on a portion of Mr. Musset's communication of last week (22d inst.) He there states, that the protoxide of calcium (lime) deoxidizes the sesquioxide of aluminum (alumina), forming protoxide of aluminum, and peroxide of calcium. Now, such a compound as the protoxide of aluminum is not known to exist, according to the best authorities; the only known oxide of aluminum is the sesquioxide, commonly known as alumina, having the composition, aluminum two equivalents, oxygen three equivalents; and the peroxide of calcium is also a very uncertain compound, having been only formed by its discoverer, Thenard. Its nature, as also its composition, and even its existence, is very doubtful. In all the slags I have yet examined, or the analyses of which I have seen, the alumina and lime generally exist as silicates of lime and alumina. I have never before heard it stated, or even understood it to have been believed, that the calcium and aluminum existed as peroxide and protoxide; neither do I think it probable, there being no experimental proof to support such a proposition.

To return to my reply to "Ferrens," who states that we have no evidence—or, if we have, it is of a contrary character—that iron and carbon unite in certain, fixed, and definite proportions. This I must deny; we have abundant evidence of fixed and definite carburets of iron. Berzelius describes two such compounds; one containing one equivalent of iron = 28, and two equivalents of carbon = 12; the other two equivalents of iron = 56, and three equivalents of carbon = 18. If, however, "Ferrens" means that ordinary cast-iron is not a chemical and definite compound of iron and carbon, then I must agree with him, for it certainly is not—that is, as far as our experience carries us. White iron is, however, a mixture of a definite carburet of iron, with an ever-changing quantity of iron, destitute of carbon; and grey iron is a mixture of a definite carburet of iron, with an also ever-changing amount of iron, free from carbon, to which must be added a varying amount of graphite, which, however, exists as such in the grey iron, and does not chemically combine either with the iron, or with the admixed chemically definite carburet of that metal. The general results of Karsten I do not consider unsatisfactory, and fully agree with him, that white iron does contain more carbon than grey iron; the only difference being, that in white iron the whole of it is in a state of chemical union—whereas in grey iron, a portion only is in that state, whilst the remainder is a mere mechanical mixture.

I presume that "Ferrens" founds his opinion on the amounts of carbon in grey and white iron, from the fact, that it is more difficult to burn off the carbon from the former, than from the latter variety. This, however, is no proof whatever, even supposing that accurate analysis had not proved to the contrary. Analysis clearly proves, that grey contains less carbon than white cast-iron. This may be taken as a general rule. The reason of its appearing less in practice is, that graphite is exceedingly difficult to oxidate, even under the influence of a very high temperature, and free exposure to the atmospheric oxygen; again, it is comparatively to the combined carbon of the white iron in large masses; hence, it does not expose such an extended surface to an oxidizing agency, and, hence, cannot burn off so rapidly. Moreover, it has not the advantage of existing chemically combined; and having another force, besides the oxidizing agency of the atmosphere, to effect its conversion into carbonic acid—viz., the simultaneous partial oxidation of its combined iron; for it is well known, that most chemical decompositions are effected more readily when two forces are called at once into play; for instance, silica, at a red heat, cannot, by itself, be decomposed by chlorine—but, as soon as charcoal is mixed with it, decomposition takes place by virtue of the affinity of the charcoal for oxygen, which it can only obtain from the silica, which has then its bond of union with its oxygen so materially diminished, that the chlorine has sufficient affinity to overcome it; and the consequences are, the formation of chloride of silica, and the oxidation of the carbon. There is no doubt whatever of the presence of phosphorus in cast-iron; I have found it in every sample I have yet examined, and, in some samples, in considerable quantity. "Ferrens" must not imagine, that Karsten meant that all grey or white irons had the compositions as assigned by the analyses I quoted, or that I gave them as analyses suitable for each class of metal; they were merely copied from amongst a number of others, to fully prove that grey cast-iron did contain uncombined carbon, and that white cast-iron did not, and to show that sulphur, phosphorus, &c., did exist in cast-iron.

I do not believe it possible to give any general formula for any class of iron, or the composition of any particular sample—as the carbon, manganese, sulphur, phosphorus, &c., must depend entirely on the nature of the ore, the limestone, and the coal, as well as the temperature of the furnace, the force of the blast, and, besides all these, accidental changes in the temperature and pressure of the atmosphere, &c. Mr. Musset states, that graphite is a compound of carbon and iron; it is, however, in its pure state, carbon, unmixed with any other body whatever; its usual impurity is iron. I may here mention, that any remarks, well-authenticated, specimens of metal, together with the ore, coal, and limestone used, in its formation, as well as its slag, and the locality, and, if possible, bar-iron made from the sample, which may be forwarded (free), will be esteemed a great favour, as an investigation of the magnitude which I have commenced, cannot be completed, unless I have the kind assistance of those most interested in the results of my experiments, and of those who are more happily situated than myself in obtaining samples of all kinds, together with local and practical information.

Hawley-road, Kentish Town, March 29.

ON THE MANUFACTURE OF IRON.

SIR,—I take the liberty now of submitting a few crude remarks upon the working of blast-furnaces for smelting iron. The first effect of the blast is to produce the requisite heat to melt cast-iron and the earthy compound—the slag or cinder. This is the result of the combination of the oxygen with the carbon of the coke, or coal, supplied to the furnace; and heat is produced as long as any free oxygen remains. This extends but a short space above the tuyeres; and the combination of the last portion of oxygen seems to be the point of fusion for the materials in the furnace. In a former letter, I hazarded an opinion as to the action going on in the furnace above this point; it has now become almost the universal custom to heat the air of the blast before entering the furnace. The degree to which this is carried is, in general, to the point at which lead melts—about 600° Fahr. I have conversed with many intelligent and experienced men upon this subject, who all admit that there is some extraordinary effect; for which they are unable to account in any rational or satisfactory manner. I have formed two theories; one of which I will submit to the thinking portion of your readers; the other, for the present, I will reserve, not having facts sufficient to bear me out; and, also, I may feel disposed some time to turn it to account for my own individual advantage. There can be little doubt, that the only use of the oxygen of the blast is to produce heat. In other respects, the action of free oxygen in the furnace must be prejudicial—upon the ore, the effect would be to oxidize, instead of reducing; it, upon the metal, to convert it first into malleable iron, then cinder. The union of the oxygen and carbon, while it produces heat, at the same time, renders the oxygen harmless. Carbon ignites somewhere about 1000° Fahr.—thus, by raising the temperature of the air as near to this point as practicable, before the carbon and oxygen come into contact, must facilitate their union, producing an intense and highly-concentrated heat at the tuyeres, and preventing any injurious action of free oxygen extending beyond. In my opinion, blast-furnaces have been carried to an unnecessary

* These modifications concern Potosi, and will be detailed hereafter.

† Edition, 1846—article, *Precious Metals*.

‡ If, instead of the version given by the Prefect of the Department of Potosi, that which was communicated to M. de Humboldt be adopted, there must be added to the figures concerning silver 270,000,000 piastres, which will make the total production of the Peruvian Andes 2,878,000,000 piastres, of which 2,658,000,000 in silver, and 220,000,000 in gold; or, in weight, to 64,980,000 kilogrammes of silver, and 337,725 kilogrammes of gold; or, lastly, to 15,003,000,000 fr., of which 14,440,000,000 in silver, and 1,163,000,000 in gold.

§ The production of gold appears to have been at certain periods very considerable at Potosi. Thus, from 1764 to 1778, there were delivered at the Mint of Lima 6,103,139 marcos of silver, and 129,000 marcos of gold, which must have produced 1 piastre of gold against 1 piastre of silver. From 1772 to 1791 the production of gold was much less; but, nevertheless, upwards of 1 piastre of gold against 8 of silver, without counting the proportion, relatively greater of gold, which was not sent to the Mint.

height, requiring an enormous power of blast to force through such a heavy mass of materials. I suspect this has arisen from a mistaken notion. In passing through the furnace, the air of the blast becomes charged with carbon, and the gases, thus formed, ignite and show flame when they meet oxygen at the top of the furnace. This flame has been regarded as part of the gaseous action passing through the whole height of the furnace, and considered a waste of heat—to apply it, the furnace has been raised. Still, flame appeared, and the next furnace raised still higher; I should say from 10 ft. to 30 ft. is high enough for any furnace. I consider the gaseous action now required to be effected, for insuring the regular working of furnaces, is, some means of diffusing more generally and uniformly the gaseous action through the entire mass of materials above the point of fusion. When small streams of air are driven in at different points, and great pressure, it seems likely that they will form small channels, and never they meet least resistance, acting there with full effect, but leaving masses at the sides unaffected; and these masses, occasionally slipping down, cause the derangement in the working to which furnaces are so liable. If a system of working furnaces by exhaustion could be rendered practicable, it would be found most advantageous in many respects. The chief difficulty appears to be, in concentrating the heat sufficiently in the hearth of the furnace. I am inclined to think that the combination of the blast with exhaustion, and a certain modification of the form of the furnace, would be attended with advantages sufficient to repay the extra expense. By the adoption of such a plan, all the combustible gases produced in the furnace, and now generally wasted, could be used for generating steam, heating the blast, calcining the ore, or other purposes. I am aware that, in many works, these gases are used for heating the blast pipes. Another desideratum in smelting iron is, to render the action of sulphur harmless. This is one of the most general impurities of coal, and its separation is difficult; coking coal does not effect its separation. The union of sulphur and iron as pyrites—the state in which it exists in coal—may be overcome by air and moderate heat, the sulphur then burning, and the iron becoming oxidised; but it resists the action of high heats. The application of air to the upper part of a furnace would not have this effect—the heat would rise too high. The application of steam will be most effective; and I strongly recommend this to the attention of parties commencing to build furnaces for smelting iron. By diffusing steam through the materials in the upper part of the furnace—say, half-way up—sulphur will be disengaged in a harmless state, the reduction of the oxide greatly assisted, the materials kept more open, and the gaseous action rendered more general and uniform.—*SCRUTATOR: March 30.*

HYPOTHESES ON IRON.

SIR.—I perceive, in Mr. R. Mushet's letter, no reply to my facts. It is a repetition of old assertions, not only without proof, but against it; and these followed by attempts at reasoning on vapours, &c., which defy parallel for contradiction and confusion. The slight of hand by which epithets heretofore applied to ironmasters are shifted to the iron, converting it to a moral agent, guilty of its own "crude, unfinished inferiority," is a new feature. The chimera which Mr. Mushet may fight, or praise, just as he pleases, is his own; like the rest of your correspondents, he can neither confer praise, nor blame, in a matter of which he is ignorant.

March 29.

BRUNTON'S ORE-DRESSING FRAMES.

SIR.—Allow me, through your valuable Journal, to ask of Mr. Brunton, if his ore-dressing frame has been tried with the improved mode adopted at Wheal Vor, St. Agnes Consols, and other mines, for dressing tin ores, within the last three years; and, if tried, what the saving in the erections, labour, &c.—*ENQUIRER: Redruth, March 29.*

DIRECT-ACTION REVERSING WATER-WHEEL.

SIR.—In reply to the letter of "W. W. B." in your last week's Journal. I beg to inform you, that I do not put forth my reversing water-wheel as a new invention (whether it may be so or not), but as a modification of existing hydraulic machines—my object being, to introduce in the works of the Coombe Valley Quarry, as its acting manager, such machinery as may save the greatest amount of labour, with the least possible cost of construction. The capital of this company is, as every one knows who reads your useful Journal, a very limited one; and it requires great care and perseverance on my part to fulfil the pledge I have made them—viz., that the undertaking shall return a net profit of 20 per cent. on the working capital. The proprietors are mostly builders—persons who have, for a long time, felt the great inconvenience of the present existing monopoly in the slate trade; and who, also, as practical men, well know the theory of cost and produce: it is to those, therefore, that I have submitted the various plans for working their quarry; and the result of which is, I am happy to say, a perfect confidence in my views. I am in hopes of getting the quarry in working order in about six weeks; and, in the mean time, shall be happy to give every information on the subject to any person, whether in this, or any other company, who will call on me at my office. It is my intention of publishing, with your assistance, a series of papers in the *Mining Journal*, from time to time, on slate and the slate trade, illustrated by detail drawings, and founded on the experience of some years, in the building, and other constructive departments of my profession.

C. S. RICHARDSON, Surveyor and Civil Engineer.

Whitefriars-street, City.

MR. GIBBONS ON VENTILATION.

SIR.—In reference to the facts on ventilation in Staffordshire, advanced by "W. W. B." and Mr. Gibbons, and which "V." has exposed himself by affecting to disbelieve, I should like the inquiry made, if there be greater facility of ventilation in the thick than in the thin seams. As a given area of a coal, 10 yards in height, must give out five times the quantity of light air afforded by a coal which is only two, it may, perhaps, be owing to this that ventilation, though precarious, can be conducted in Staffordshire with a more downcast and upcast, devoid of artificial aids. A comparison of the effects in different strata would ascertain the question. I am happy to hear my hasty idea of steam as an auxiliary, has been previously sanctioned by a proposer of Mr. Gurney's experience. I shall take the first opportunity of examining his plans—for "V."s opinions on them are contradictory; nor does my letter furnish the least indication of any particular way of applying the steam. So far as I can gather from "V."s paragraph, Mr. Gurney contemplates using steam by pressure, and not by condensation. I am surprised that a person who moves heavy bodies with such ease, should be in any difficulty how hydrogen gas floats down a current of air. It seems this river, which hurls rocks, is unable to support this little down. That the incline carrying the current back from the extreme rise of the workings may be increased so much, that the ascensive power of the gas shall afford a great obstacle to the other current ascending to the turning point, is obvious, and, if the rise is very steep, will neutralise it; but there is then a simple remedy, which I leave to "V."s natural ingenuity. In Mr. Gibbons's book, of which I do not believe "V." has read one word, except what he has found in the quotations, the difficulties of this description, in such a colliery as he describes, are specially provided for. The simile offered by "V." on carbonic acid gas, I comprehend, and also its absurdity. If he believes the parallel holds betwixt a mixture of fluids and the eccentricities of a tornado, let him take—atmosphere being 1000—the specific gravity of a hay-stack, a house, an uprooted tree, a great gun, and a sentinel; if he find a difficulty, ask the aid of M. Pratique; if both are baffled, let them wend their way—the Valentine and Orson of ventilation—to the Durham College; and, if Nature still refuse "to be asked questions," a little of that study of pneumatics recommended to "F. B." may enable them to identify houses, guns, sentinels, and hay-stacks, with the spherical particles of fluids, pressing equally in every direction. "V." perhaps, is already aware the air we breathe is a mixture of fluids of two specific gravities.

On the 27th of February, I indicated the absurdity, or unfairness, of supposing air, which entered a mine at 80°, would pass through it of the same temperature as if it entered at 40°. Since then, "V." has raised the summer heat to 100°, which is very hot indeed; and "F. B." justly shows that a chimney exposed to that temperature would, instead of containing air at 62°, become a powerful auxiliary. Against this, "V." advances an extraordinary notion, that solid substances absorb less heat than air. Let "V." next summer, while he fans one cheek with a cool zephyr, at the temperature of 100°, apply the other to the brickwork of the chimney heated by the rays of the same sun, and acquaint us if he can face that argument. "V." has put a question respecting gas in "X."s mine, which he would have avoided had he attentively read that letter. I congratulate "V." on his domestic comforts in keeping the door clear, and providing a channel of ingress and egress through the chimney for himself, his provisions, and friends; but this letter of the alphabet has announced its intention of departing from us. I, at one time, thought "V." was Fluellen him-

self, from the strong evidence by which he identified "W." and Mr. Gibbons, but it was not so; and, at last, "V." has been resolved into the initial of a vanishing quantity.—*DAVID MUSHET, Jun.: Gloucester, March 30.*

DR. CLANNY'S IMPROVED SAFETY LAMP.

SIR.—Agreeable to promise, I send you as correct a list (as I can obtain from different quarters) of the collieries in which my improved safety lamps have been called into use; I give the names as they stand upon my list, without referring to counties:—Willington, Walker, Wall's End, Sedghill, Gosforth, Coxlodge, Heaton, Patricroft, Monkwearmouth, Thornley, Wingate, Belmont, Jarrow, South Penrith, Felton, Oxclose, Rhymney, Mostyn, Coalbrookdale, Risca, Broadfield, Newcastle-under-Lyme, South Moor Colliery, Shield Row, Holmside, Crayhead, and Barnhope—in all 27 collieries. One manufacturer of my safety lamps, informed me that to order he had sent 24 safety lamps to London; and another manufacturer, that he had executed eight dozen of my safety lamps for different parts of the kingdom. I expect ere long from the manufacturers correct information as to the extensive use of my improved safety lamps, to give additional numbers, and of which I promise you as early an account as I can obtain.

Sunderland, March 29.

W. REID CLANNY.

IMPROVEMENTS IN WORKING COLLIERIES.

SIR.—Amongst the many causes deteriorating the air in mines, is smoke—smoke from oil lamps, and smoke from gunpowder; and I am convinced much relief would be given to many mines if the smoke from these two sources could be stopped. I had a lamp put into my hand the other day for burning tallow, which gives very little smoke, instead of oil, and which has done a great deal of good in the collieries about Edinburgh; it is the invention of an intelligent "overman" in the Marquis of Lothian's collieries, near Edinburgh, whose name I do not know. Gun-cotton, which is said to give no smoke, could be substituted for gunpowder—and thus much smoke, which is so hurtful to air, might be got rid of. Could you, or any of your correspondents, inform me where, and at what rate, gun-cotton is to be had?—*R. M.: Glasgow, March 30.*

VENTILATION OF COLLIERIES.

SIR.—Although so much has appeared in your valuable columns, under the above head, from "V." "W." "F. B." "T. Deakin, &c., &c., I hope I may be allowed to say a few words. I believe yourself, and many of your readers, will agree with me, that if these correspondents would cavil less, and stick more to the subject they would wish to benefit, it would be better. The efficient and safe ventilation of a colliery, however fiery it may be, can be effected by carrying out the following simple plan, which I will endeavour briefly to describe. I will suppose a piece of coal required to be worked—say a mile by three-quarters of a mile—the following rough sketch may render my description more clear:—



Let A be the supposed site for the working pit, or shaft; I would have only one pit for winding the coal, not two, as is the general practice, on the most suitable point, near the centre of the piece of coal, but at the very extreme rise. I would sink another shaft B, 1 ft. in diameter, larger than the working shaft A: to the dip of B and A considerably. I would sink another shaft C, of the same dimensions as the shaft A, and so situated in the piece of coal, that when the coal is got around the shaft A, and the hauling becomes expensive, the shaft C may be used as the winding shaft. On the top of shaft B, I would build a chimney 40 ft. high, the same in diameter as the shaft; and at the bottom of shaft B, have a well-constructed furnace always kept at work. Get a well-constructed air-road, not less in area mind than the downcast shaft C, carried from this downcast shaft C, through all the workings of the colliery, to the bottom of the upcast shaft B; carry the air in a body, do not split it. Carry the air-roads at the top of the coal, or as near the top of it as practicable, taking care that the air-road is fully in area equal to the downcast shaft C; never let it be throttled, more mischief arises from this than is imagined.

You will see that the working shaft has nothing to do with the ventilation—I condemn this universal practice, in toto. If these ill-described plans are carried out—I care not how fiery the colliery—I fearlessly assert, that we shall have no more sad tales of hundreds of our poor colliers being hurried so fearfully to their last account. Many will say that my plan is too expensive—I grant it may be more expensive than most of the slovenly plans adopted, but then it will be effective; and I think all your readers will agree, that no man has a right to work a colliery, who, to save his gold, will knowingly risk the life of his fellow-man. I have not time to write more on this subject now; and, in conclusion, beg the opinion of Mr. Deakin, and other practical miners, upon what I have stated. I claim no originality—nothing new or wonderful—but I beg attention, from those capable of giving an opinion, to what I have, perhaps, imperfectly described.

March 31.

ALPHA.

THE DRAINAGE OF COAL SEAMS.

SIR.—The remarks of "V." on the disengagement of gas in opening new collieries, recalls the views of Mr. Ryan, who I believe first explained fully the theory of these and other facts in mines. There is no question, had Mr. Ryan been a coalowner, he would have effected much good; but he had the discouraging task of engraving acute and refined views upon the wild stocks of practised prejudice—a disadvantage which nips the buds of an expansive mind, and blights the quality of its fruit. As confirmation of his opinions on the effect of faults in detaining the products of fermentation, and enriching the quality of the coal, it is to be remarked that, in the small coal-field of the Forest of Dean, where there are no dykes or dislocations to impede the continuity of the strata, the mines have no inflammable air, which appears entirely drained off, according to his theory, and the coal correspondingly of a poor quality, compared to the produce of districts where faults abound.—*D. MUSHET, Jun.: Gloucester, March 29.*

VENTILATION OF MINES.

SIR.—In my last letter, I mentioned two facts in the ventilation of my colliery, and in answer to "V."—I depend on fire in the 30 fathom and 15 fm. pits in hot dry weather, as the ventilation will not move without it; but I would call his attention, also "W." of Dudley, and particularly Mr. Gibbons's, to the following extract of a work published by Dr. Ure, in 1839, giving a short description of coal mines; and, speaking of the large collieries at Newcastle, he says:—"Here the circulation is made active, by rarefying the air at the upcast shaft by means of a very large furnace, placed either at the bottom or top of the shaft—the former position is generally preferred; when it surmounts a single pit, or a single division of the pit, the compartment is made air-tight at top, by placing strong buntons or beams across at a suitable distance from the mouth; on these buntons a close scaffolding of plank is laid, well plastered or coated over with adhesive clay. A little way below the scaffolding a passage is previously cut either in a sloping direction, to connect the current of air with the furnace; if any obstacle prevent, the scaffold from being erected within the pit, this can be made air-tight at top, and a brick flue carried thence along the surface to the furnace; the furnace has a size proportioned to the magnitude of the ventilation, and the chimneys are either round or square, being from 50 to 100 ft. high, with an inside diameter of from 5 to 9 ft., tapering upwards to a diameter of from 2½ ft. to 5 ft.; such stalks are made 2 in. thick in the body of the building, at bottom they are lined with fire-bricks. The plan of placing the furnace at the bottom of the pit, is, however, more advantageous; because the shaft through which the air ascends to the furnace at the pit mouth, is always at the ordinary temperature—so that, whenever the top furnace is neglected, the circulation of the air becomes languid and dangerous to the workmen; whereas, when the furnace is situated at the bottom of the shaft, its sides get heated, like those of a chimney, through its total length—so that, though the heat of the furnace be accidentally allowed to decline, or become extinct for a little time, the circulation will still go on, the air in the upcast pit being rarefied by the heat remaining in the sides of the shaft." Your readers will also find the heat chimney, with furnace either at top or bottom, described in the *Edinburgh Encyclopedia*, published in 1820. As I have stated, Mr. Gibbons is right, in putting on a chimney on the upcast; for every means should be used to make the air take its natural course to there; if the current does so invariably without a chimney, I agree with "V." so far, in thinking it of very little additional service—without a furnace in the bottom, I very much doubt of its safety alone. From the above extract, Mr. Gibbons must cut a sorry figure before your readers, in making claim to this method of ventilating mines; and your readers will also doubt if Mr. Moss

Taylor is going to be the "intelligent and indefatigable surveyor," to lead us through this Red Sea, as it was his place to have let Mr. G. know what had been before done by others. I regret much that Mr. T. Deakin has not put to the test his way of it—viz., a fire at the bottom and top of shaft—and given the result; we have not forgot his notable method of purifying the atmosphere, laid before your readers some time ago. I hope Dr. Murray will continue his interesting geological papers—these are worthy of him; but to push forward hurried thoughts or remarks on ventilation, suggested by some imperfect opinion, without the practical trial of it, cannot increase his authority in these matters; to both these gentlemen, I would recommend the adage—"Ego nec studium sine divite vena, nec rude quid prosit video ingenium."—*X.: Carlisle, March 29.*

VENTILATION OF MINES.

SIR.—I have looked on in silence for months past, expecting that some of your talented correspondents, who have all the appearance of being burning and shining lights, would, ere this time, have laid before the coal-owners and the public some tangible scheme of ventilation, or improved method, bearing the stamp of originality, for working our coal mines; but I have hitherto looked in vain. The object of one class of your correspondents seems to be, to labour to establish learned theories, and that of the other class to uproot and destroy them. Thus, between argument and refutation, the writers have apparently lost sight of their philanthropic object; and, while this war of words is going on, carburetted hydrogen gas is moving down its victims, not by tens, but by fifties.

Being practically acquainted with the working of coal mines, and being anxious to improve the condition of a worthy class of men, I have, for a long time past, made the subject of ventilation, and an improved method of working coal mines, my particular study. By your permission, I will give the results to the public:—

1. I have invented a machine for working coals, by which I can work the hardest coal without the use of gunpowder, and by which I expect to banish every naked light from the mine, by enabling the miner to work with a safety lamp; I also calculate upon saving 15 or 18 out of the 20 per cent., now nearly lost in "small," by the present barbarous mode of "kivring," "nicking," &c.; and independent of the advantages to the pitman, I calculate that coal will be worked about 40 per cent. cheaper than at present. By working the coals by this machinery, the operations will be confined to a less area, the ventilating current can be more easily concentrated, and thereby rendered more effective. I have taken preliminary steps towards securing this invention by letters patent; but I wish to obtain the assistance of an influential party, connected with the coal-trade, to enable me to introduce it into the coal mines on a scale commensurate with its merits; and should the notice attract the attention of such a party, I shall be happy to treat with him or them upon equitable terms.

2. Those of your readers who have paid any attention to the cause of explosions in coal mines, which may be scantily gleaned from the evidence given before coroners' juries, and from incidental facts which occur occasionally, must at once conclude there is something "rotten" in the system. After attentively reading and weighing everything that has come in my way, bearing on this important subject, for years past, I have, some time since, come to the conclusion, that there is but one course by which the cause can be removed—and that is, to fix and lock every light in the pit, and to allow neither man nor boy to have the least control over them, except a man or men, especially appointed for that purpose. Would the owner of a powder magazine allow a man to enter it with a naked candle, without using some other precaution than merely warning the man as to the insidious nature and destructive power of the powder? You may warn a man of danger, and caution him not to approach it; but the most effectual way to prevent him doing mischief is, to put it out of his power. It is not my intention to occupy your space by going much into detail in the mode of fixing these lights in the mines; but shall gladly afford every information in my power to any owner of collieries, who may apply to me for that purpose. The general principle which I would adopt is, to fix and lock up all the lights in frames, or posts for that purpose, in the horse-roads, &c., so as to give out the greatest amount of light to the best advantage; these lights should be inclosed in lamps or lanterns. A man, or men, should be appointed to have the entire control and management of those lamps or lanterns, and on whom the whole responsibility would rest.

It must be matter of surprise, as well as regret, that, notwithstanding the rapid progress of the arts and sciences during the last half century, the mode of working our coal mines has alone remained nearly stationary; and from what I have seen in old pits' workings, I am inclined to think that the pitmen in the last generation were actually more expert in working coal, than those of the present day, considering the limited resources they possessed in regard to steam-engines, &c. If any one doubted this fact, let him read the account of an accident recorded in your Journal of the 27th inst., which took place at the Yew-Tree Colliery, Kingswinford, where, in the year 1847, seven boys were sent down the pit early in the morning to BRUSH OUT THE SULPHUR! Let this be written as with a sunbeam. Need explosions of fire-damp excite surprise after this? Surely, Mr. Editor, this is an unmistakable sign of rottenness in the system. In what light are we to consider the melancholy accident recorded last week, by explosion of fire-damp, in one of Mr. B. Gibbons's pits? It would be too much to say, without a full knowledge of the facts of the case, that that accident is to be considered conclusive evidence against his system, but it certainly has a tendency to throw doubt upon it. We cannot blink the fact, that since the introduction of safety lamps into our coal mines, the loss of life by explosion of fire-damp has been fearfully on the increase—but I am persuaded, that, if a system of fixing up the lights, and locking them from the men, had been adopted 30 years ago, some hundreds of valuable lives might have been saved, and consequent misery and distress prevented, independent of the vast sums of money these accidents cost the coalowners. Should any of the coalowners entertain the idea of testing my system of fixing the lights, &c., and still have doubts about the matter, I would advise a few of them—say, six or eight—to form themselves into a kind of club, or society, and each man contribute a small sum of money to a general fund, with which to try my system experimentally, by first having only one of their collieries fitted up, in that way; then, they might, for little expense, put it to a practical test; and, in the event of it turning out well (of which I have no doubts), each owner could have his colliery fitted up in rotation. I have little doubt but several collieries might be fitted with fixed lights, and so placed in comparative safety, for less money than one explosion would cost, not to speak of the loss of life, &c. Now, Mr. Editor, I have not only struck out a new path, but, I consider, a safe one too; and also an easy and inexpensive method of putting it to a practical test, which I trust some of the coalowners will show their superior sense in adopting; and should any of them require my assistance in carrying out these plans, I shall do all in my power to meet their wishes.

Bensham, Gateshead, Tyne, March 30. WILLIAM STOREY.

MINE SURVEYING—ERRATUM.

SIR.—In my letter, inserted in your Journal of the 27th inst., there is an error, which I should feel obliged by your correcting:—"90 yards" should be "60 yards."—*INVESTIGATOR: St. Agnes, near Truro, March 30.*

ELASTIC ATMOSPHERIC TUBES.

SIR.—With reference to the complimentary paragraph in your paper of Saturday last, I beg to say, that I was not unaware of the fact of various methods being tried, to discover a practical resilient tube for railways. My claim, however, is, to the brass wires, or rods, as a strengthener for elastic tubes. The double-elastic tube, sent you since the other (noticed in another column), I claim as a new invention. A crudity it may be—but if you will condescend to publish it, something better may come out of it, especially as we are yet but in a transition state, with respect to railway construction. You speak of "expense;" that argument would have equally applied to the first railway. With all due deference to yourself, Mr. Editor, I may be allowed to mention, that there are modes of reducing the wear and tear of even two or three passages per day—but which, I am rather inclined to think, would not, after all, be so great with a double pipe, and the slit on each side—so that no deposits from the carriages of coal, or dust, could well rest in the slits—by the sides of which, small circular tubes might hang, if desired; or lips might be used, as already suggested by another, for a single tube. An objection may arise as to two openings for air—but there would be an advantage with respect to a defect in any part of the opposite tube, weakening the force of the atmospheric column in that particular place; and then there is the advantage of the guide-wheels to obviate the objections to the flange, as shown in your Journal some time since; an engineer, of Plymouth Dockyard, pronouncing the mathematical defects, as pointed out by me, to be unanswerable. I observe an able letter on the flange in your Journal of Saturday week.

Penzance, March 29.

ALFRED T. J. MARTIN.

CANAL SHARES.

Sir,—Your comparative prices, in Saturday's paper, of canal shares, may be generally accurate, for I know—but you have been sadly misled, as to the present price of Somerset Coal Canal, which you quoted at 130l. Within these few months, by auction, some fetched only 92l. per share; and, within these 14 days, have been sold at 85l. by private sale.

March 30.

A PROPRIETOR.

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

MONDAY.....Great Wheel Marthia Mining Company—office, at One.
Great Wheel Williams Mining Company—Plymouth, at Twelve.
TUESDAY.....West Wheel Marthia Mining Company—Bedford Hotel, Tavistock, Twelve.
Barossa Range Mining Company—office, at Twelve.
WEDNESDAY.....East Coombe Mining Company—Fortescue Arms Hotel, Barnstaple, Two.
English Copper Mines Company—office, at Twelve.
Trellech Consols Mining Company—office, at One.
THURSDAY.....Coombe Valley Slate Company—office, at One.
Royal Mail Steam-Packet Company—London Tavern, at One.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

VAN DIEMEN'S LAND COMPANY.

The annual meeting of this company was held at the offices, Great Winchester-street, London, on Tuesday, the 30th March.

JOHN CATTLEY, Esq., in the chair.

Mr. HOWELL (the secretary) read the minutes of the former meeting, and the report of the directors, from which we make the following extracts:—

REPORT.

The Government survey of the company's lands has been completed; and the Lieutenant-Governor of Van Diemen's Land is about to forward to the Secretary of State the description of those lands, with a view to the grant of the requisite warrants by her Majesty's Government; and the directors are now enabled to state, that the said documents have been received, and that Earl Grey has signified the intention of Government to carry out this arrangement fully, in pursuance of the company's charter. Steps have been accordingly taken for preparing and submitting a bill for the sanction of the grant by Parliament; and the directors trust, that an act to empower her Majesty to convey the lands in question to the company, will be obtained in the present session of Parliament. The proprietors will be gratified at learning, that the lands thus awarded to the company, by an agreement between the Lieutenant-Governor of Van Diemen's Land and the company's chief agent, as shown by the tracings and descriptions transmitted to Earl Grey, consist as follows:—viz.: Circular Head, 20,000; Surrey Hills, 150,000; Hampshire Hills, 10,000; Middlesex Plains, 10,000; Emma Bay, 50,000; Woolnorth, 100,000; Robbin's Island, 24,450; Walker's Island, 1720; and Trefoil Island, 255—making a total of 366,625 acres. Valuable as these extensive grants must ultimately prove, yet the directors regret to add, that the expectation which they had entertained of their becoming so at a very early period, has been frustrated by Sir Eardley Wilmot's announcement to Mr. Gibson, that in consequence of the Government surveyor's unfavourable report of the line of road previously laid down between the settled districts and Emma Bay, the Government gangs had been withdrawn to another quarter of the island. The result, however, of an interview with the present Lieutenant-Governor, before his departure from England, leaves the directors to believe, that the project of establishing such a road will ere long be realised; and that the expectation which they had entertained of the improvement of the island, by the means of a road, will be no farther lost to the company from over production by their tenants, as in March 1850, their leases, and with them all the company's engagements, will terminate. The sales of cattle and sheep have been inconsiderable, and at very low rates, and the horses disposed of were few, and netted small sums; the exact amount cannot be accurately shown, as, from some unaccountable delay, no account sales have yet been received. On the other hand, the sales of live stock for the tenants' subsistence, have been very large. The company's sale of wool for 1849, consisting of 74 bales, realised, at public auction, 1070l. 13s. 11d. In the course of the eight months from the 5th of Jan. to the 5th of Sept. last, 20 vessels had arrived, and 31 departed from Circular Head to foreign ports; besides numerous coasters trading between Stanley, Emma Bay, and Launceston; and that the traffic was progressively improving. Whilst provision has thus been made to advance the commercial interests of the new societies growing up at Stanley and Emma Bay, every attention has likewise been paid to their moral and religious improvement; and the directors have great pleasure in stating, that as far back as March, 1846, the chaplain (the Rev. Mr. Grigg) had secured the services of a respectable and well-qualified schoolmaster, and a mistress, for the schools at Stanley. A master and mistress had likewise been obtained for schools at Emma Bay, where buildings for the purpose were in course of erection, at the cost of the tenants; and Mr. Grigg states his sanguine expectation, that both places will shortly possess as many social advantages, and exhibit as fair a social character, as any like amount of population in any rural district of England.

The CHAIRMAN said, the directors had endeavoured to state in that report every thing that was likely to interest the proprietors, and all that came within their knowledge, which they had done as candidly and fairly as they could; as that it would leave him but little to say—indeed, the less he said the better, as that was the result of all their deliberations. Their chief agent had now instructions to reduce, as far as possible, the working expenses of this establishment, and so to alter the terms of tenancy, that the company might ultimately become landlords, and not farmers. (Hear, hear.) He might, on the whole, say that their people were increasing, and as far as could be expected, the cultivation was increasing. Their tenants were all poor men at the beginning, but by industry, had become prosperous; and it was gratifying to him and the directors to be able to state, that any well-conducted man going to their establishment, would have the power of doing well for himself and family—so much so, that they hardly knew of an instance of a man not succeeding. These who had succeeded had done so to a far greater extent than they could have done in this densely-peopled country. There was nothing else that he knew of, but he should be happy to answer any question in his power; and with these observations, he would move that the report now read be adopted, printed, and circulated amongst the proprietors.

A PROPRIETOR asked, if the tenants had increased.

The SECRETARY said, the population had increased, but there had been no fresh tenants in the year. There had been an increase of 52 labourers.

The CHAIRMAN said, they could not effect an alteration till 1850. He did not consider there would be any great loss this year from their system of taking produce. As to potatoes, they had agreed to take them at 5l. per ton, and Mr. Gibson had been selling them at 5l. 10s.; then as to corn, that was taken at 7s. a bushel, and had been selling at 7s. 6d. per bushel.

Mr. MAYNARD observed, that, since 1840, they had taken from them at least 70,000l.—was that system to be looked upon as finished?

The CHAIRMAN said, they were induced to offer the first 50 tenants the advantage of taking their produce at fixed prices; but experience had now proved the expense and inexpediency of continuing it any longer. He hoped, by this change, now proposed in the tenancy system, there would be a return for their capital in the shape of rental, or by the sale of their lands, as times improved.

The SECRETARY, at the request of the chairman, read the last resolution, passed at the court of directors on the 18th March, 1847, in respect to the chief agent, Mr. Gibson, giving his attention to the reduction of expenditure, and the change of the system in regard to the tenants.

The CHAIRMAN assured the meeting that this resolution underwent a deal of consideration before it went out, and his only fear was, that they had gone too far, if anything, by this resolution; but Mr. Gibson would feel it his duty to see it enforced, and he hoped the consequence would be, that they would get a small dividend. (Hear, hear.)

The following gentlemen were elected directors of the company—namely: W. B. Browne, Esq., Capt. Carr, Thomas Harrison, Robert Helme, John Pearce, G. Rougemont, F. F. Rougemont, T. W. Cattley, and J. G. Cattley, Esqs.; and James Baber, C. R. Lucas, and W. Wilkinson, Esqs., were elected auditors unanimously.

Mr. WILSON moved, that the thanks of the meeting be given to the chairman and directors of the company.—Mr. SHEPHERD seconded the motion, which was passed unanimously.

Mr. WHITCOMB regretted that, after they had expended 200,000l. in 22 years, they had still to draw on the proprietors to the extent of 2000l. for their expenses.

Mr. ROUGEMONT (a director) hoped their abandonment of their present system would put an end to that. If Mr. Whitcomb could suggest anything to the board that would improve the state of things, they would be most happy to listen to his suggestions. He admitted the present system was bad, but it could not be altered till 1850. It would not avail them to refer to the past. Their new system, he hoped, would put things to rights, and bring them a good description of tenants. If industrious men of family would only make up their minds to go out to Van Diemen's Land, he had no doubt of their making a respectable living. They would not go there to be neglected, for their excellent chief agent, Mr. Gibson, would take every care of them when in the colony.

Mr. SHEPHERD asked, if they would undertake to send them out?

The CHAIRMAN said, they could not be at the expense of sending out poor persons; but to a class above them they would afford every facility. They wanted good steady farmers, with some energy about them, not such as wished to be fethered livers. Supposing such persons had from 200l. to 300l., and wanted an additional 200l. to 300l., they would not refuse them; moreover,

they would provide such persons with food for 12 months, lend them bullocks, sheep, and implements, for the cultivation of the lands. These he thought very great advantages, especially in a country where the interest for the loan of money varied from 10 to 12 per cent. (Hear, hear.) Besides, they would meet there every kindness from their excellent clergyman, of whom he could not speak in sufficient praise; that gentleman had spent at least 2000l. of his own money on the lands of the company.—The SECRETARY: And 200l. towards the erection of schools. (Hear, hear.)

Mr. MARSH then moved a vote of thanks to the chairman, which was seconded by Mr. WILSON, and passed unanimously.—The CHAIRMAN returned thanks, when the meeting adjourned.

CLARENCE RAILWAY COMPANY.

A general meeting of shareholders was held on Wednesday, the 31st March.

HENRY BLAXSHARD, Esq., in the chair.

After the usual preliminaries, the following report was read:—

REPORT.

The committee of management of the Clarence Railway Company now lay before the proprietors a statement of the company's income and expenditure for the year ending 31st December, 1846, and the position of the company's affairs to that date. The accompanying statement of accounts, shows the gross receipts for the 1st January, 1846, to the 31st December, 1846, to amount to 37,407l. 6s. 3d., and the net profit for the same year, to amount to 17,374l. 4s. 9d.; being, as compared with the year 1845, a decrease of 2655l. 9s. 4d. Without dwelling upon the fact of there having been no coal whatever shipped at Hartlepool from off the Clarence and Stockton and Hartlepool lines since the 20th of May, 1846, owing to the Stockton and Hartlepool line having been necessarily closed from that date, during the progress of the works at the New West Hartlepool dock, this decrease of revenue may be at once attributed to the nearly unexampled depression in the coal trade during the greater part of the year 1846; and the reduction in the company's dues that it was found expedient to make, consequent upon that depression. It will, however, be satisfactory to the proprietors to know, that the company's revenue is now largely increasing; the income for the months of January, February, and March, in the current year (1847), exceeding in amount the revenue for the corresponding months in any antecedent year. The state of the accompanying accounts for the year 1846, after satisfying all fixed payments, and discharging all current expenses, furnishes a net balance of 2831l. 14s. 5d.; in addition to which, there remains a reserved fund, from the year 1845 (as per report for that year), of 2738l. 1s. 10d.—6314l. 16s. 3d., is applicable for the purpose of distribution as dividend upon the original shares. Your committee recommend, that a dividend of 1l. 10s. per share on the original shares (as in the year 1845) be now made, which will amount to 4500l.; thus leaving the remainder of the 6314l. 16s. 3d.—viz.: 1814l. 16s. 3d.—an unapplied fund in reserve; this dividend to be payable on and after the 1st day of May next, and that the transfer books be closed for that purpose on the 21st day of April next. Your committee, in the exercise of the general discretion confided to them, have entertained an opinion, that it would be desirable, both for this company and the Leeds and Thirsk Railway Company, that they should be amalgamated; and, in consequence, on the 28th of November last, your committee entered into a preliminary arrangement with the Leeds and Thirsk Company for effecting this object, subject to the approbation of the proprietors, on the following terms, viz.:—That the value of the Clarence Railway shall be taken to be 450,000l. That the 4 per cent. Government loan shares, the 5 per cent. first class preferential shares, and the 5 per cent. second class preferential shares, amounting together to 235,000l., shall remain permanently preferential in the amalgamated company; and the balance of the 450,000l., being 215,000l., shall be paid to the Clarence Company, in cash, within seven months if required after the passing of an Act of Parliament for effecting the amalgamation. Your committee believe that, after discharging all claims upon the company, the sum remaining distributable amongst the original shareholders will give about 56l. per share. Your committee have submitted a Bill in Parliament to be prepared, for legalising the arrangement, and submitting to the proprietors at a special general meeting, held for the purpose on the 23d inst., when the same was assented to unanimously; and it was also, at the same meeting, unanimously resolved, that the committee of management of this company be authorised to propose, and this meeting do assent to, all such alterations, if any, in the said bill, in its progress through Parliament, as the committee of management may think proper to assent to and adopt, or as may be required by Parliament. The company's books and accounts are open for the inspection of the proprietors, or their agents, at the company's office, in London, where every inquiry will be answered.

A dividend of 30s. per share on the original shares, for the past year, was declared, payable after the 1st of May; and thanks having been passed to the committee of management, for their exertions on behalf of the company, the meeting adjourned.

NEWCASTLE AND CARLISLE RAILWAY.—The annual general meeting was held on Thursday, the 25th ult., at Newcastle.—MATTHEW PLUMMER, Esq., in the chair.—The report stated, that the receipts for the past year amounted to 103,162l., being an excess of 15,942l. over the receipts of the preceding year. The increase appears to be progressing; for, on a comparison of the traffic returns for the first 11 weeks of the present year with the corresponding weeks of the past year, an increase is shown of 3847l. in favour of the present year. It was stated, in reference to past events, that the directors thought it more judicious to borrow money, than to sell the reserved shares at a sacrifice in the market; but when the capabilities of the line began to be developed, they sold them at a considerable premium, for the benefit of the company, the proceeds being applied towards the extinction of the debt incurred by the retention of them.—Since last August, shares to the amount of 225,000l. have been distributed amongst the shareholders at par, and the instalments, as they fall due, are appropriated to pay off the debentures on which the money was raised. The Alston branch is to be proceeded with immediately; passing through a rich mineral district, it is expected to be very remunerative. Arrangements have been completed with the Lancaster and Carlisle, and the Maryport and Carlisle Railway Companies, for a central station at Carlisle; and also with the York and Newcastle, and the Newcastle and Berwick Railway Companies, for a central station at Newcastle. The table of rates and fares has been revised. The dividend declared for the past year is 5s. per cent. Negotiations for leasing the Maryport and Carlisle Railway are in progress. The balance, after paying the working expenses and other charges, was 39,064l. The sum expended on the works, &c., of the railway during 1846, amounted to 118,391l.; and the total, since the commencement, to 1,317,501l.—The CHAIRMAN, in reply to some questions, said, there was no intention of creating new shares for the Newcastle and Carlisle Railway; but it was intended to issue some shares for the Alston branch. Their loans were effected at 4 per cent. interest. That part of the premiums arising from the sale of shares, had been appropriated to pay their former dividend; while, in the present year, the dividend was paid out of the revenue alone.—Resolutions were passed, adopting the report, approving of the dividend for the half-year of 3l. 15s. on the whole shares, and 13s. 9d. on the quarter shares, re-electing the retiring directors, and adjourning the meeting to the 26th of April next.

WEST FLANDERS RAILWAY.—The half-yearly meeting of shareholders was held, on Saturday last, at the London Tavern.—W. P. RICHARDS, Esq., in the chair.—The report of the directors stated, that the portion of the line between Bruges and Thourout was opened for passenger traffic on the 6th of Oct. last; a short distance further (to Lichtervelde) has since been opened; making, in all, 14 miles now in operation. The severity of the winter has prevented the completion of any more of the line; none of the unfinished works, however, have been injured. The portion from Lichtervelde to Roulers (5½ miles) will, it is expected, be completed in a week. The directors confidently expect that the line will be ready for traffic, as far as Courtray (which completes the communication between the State lines), by the end of June. With regard to the works yet to be undertaken, the necessity for a tunnel through the sand-ridge between Menin and Ypres (the only one involving any risk as to the cost of execution) has been obviated. There is no doubt that the works will be completed within the estimate presented to the last half-yearly meeting. The experience of 13 weeks on the portion of the line opened, has confirmed the traffic estimates previously made. There were 5138 passengers between Bruges and Thourout during the 13 weeks ending 27th Feb.; being at the rate of 20,532 per annum. This, too, is at the worst season of the year. The capital account showed a total of receipts, (deposit on two calls, and amounts paid in advance on four more) of 254,400l., less 730l. of deposits and instalments unpaid. The constructive account showed a total of expenditure of 24,595l. 11s., which set off against the receipts above named—6,087l. 11s. 3d. of interest and profits on exchanges; 24,000l. of caution-money returned by the Belgian Government; 558l. 1s. 1d., receipts from traffic since 6th Oct.; and 4279l. 4l. 8d. of accounts still in course of payment—leaves a balance at bankers' and investment of 73,992l. 17s. 11d.—The CHAIRMAN said, the opening of the line from Bruges to Thourout had given the directors an opportunity of judging of the expense of constructing the whole of the railway. It was a fair average, because the most difficult of the earthwork throughout the entire line was within that distance. The distance was 11½ miles; the cost 67,477l., being at the price of 5750l. per mile. The cost of management could not be ascertained so correctly at present. The traffic could now be calculated within a trifle, by the excellent method of M. Desart, as was the case of that between the towns of Bruges and Thourout. In conclusion, he expressed his opinion that the undertaking would eventually be very profitable, and would, at least, pay double the interest of the State lines.—Mr. CURTIS (the managing director abroad) gave some further detail as to the progress of the works.—The CHAIRMAN said, the last call would carry them to Courtray.—The report was then adopted unanimously.

PREVENTION OF RAILWAY ACCIDENTS.—A plan for preventing accidents, or at least for mitigating their fatal effects, has been submitted to the chairman and directors of the South-Eastern. It is said to have met with approbation. It consists, simply, either by some mechanical contrivance in connection with the engine-driver or stoker, or by placing a constable, properly qualified, on the front (outside) of the first carriage in every train, or that next to the tender, whose duty it should be, whenever the engine gets off the rails, or a collision was likely to ensue, to disengage the train from the engine and tender, by withdrawing the connecting pin, as is and always has been the practice on the London and Blackwall Railway, in order to throw off the respective carriages at the different intermediate stations. There cannot, supposing the necessary foresight can be exercised, or the requisite presence of mind commanded, be the least doubt that by so doing many disastrous accidents may be avoided, or rendered less lamentable; consequently, the result would be the preservation of much valuable property, and the salvation of many more valuable lives. It is certainly worth the experiment; and if found to answer, the result cannot be too quickly nor too extensively circulated. The trains will be, no doubt, by

the above means, with the aid of the breaks, almost instantly stopped. The engine and tender, of course, proceed more rapidly, relieved of their train, and in cases of collision, the damage to them will be perhaps greater; but not such as to be deemed an objection to the adoption of the proposed means, when the salvation of the carriages will probably more than compensate that extra damage, leaving the preservation of life and limb out of the (pecuniary) calculation. The engineer and stoker might be exposed to more serious injuries; but as they can almost always foresee their danger, they are enabled to provide against it; at all events, it would no doubt render them more cautious in proportion to the greater risk.

PLANT FOR THE CALEDONIAN RAILWAY.

Last week we had an opportunity of inspecting part of the "plant" that is in preparation at Greenock for the Caledonian Railway (which line, it is expected, will be open for traffic in the course of next year); and, from what we observed, we should say that it is likely to be of the most efficient and improved description. The Greenock Railway, our readers are aware, has now become a portion of the Caledonian Railway; and, in consequence, the latter company have been enabled to take immediate possession of the workshops, smithies, and machinery of the former. This acquisition has given them a great advantage; and, with some additions to the buildings formerly in use, permits them at once to commence manufacturing "plant" on a large scale, in a town that has long been celebrated for the skill of its mechanics and artisans, as well as for the supply of the materials used in the construction of such implements. The Greenock establishment is under the superintendence of Mr. Sinclair, who has had the charge of laying it out according to the present arrangement. It consists of numerous locomotive and carriage saloons, fitting-up shops, forges, and smithies; and, in extent, we are told, rivals that of the naval yard at Portsmouth. The saloons for building and finishing first and second-class carriages are alone 320 ft. long by 48 ft. broad, and are two in number, forming, as they do, the first and second stories of a very handsome building. The smithies contain no less than 50 fires, placed in the middle of the apartments, and are lighted from top and side windows, which give them a very light and cheerful appearance, and, at the same time, enable the men to work to greater advantage, and retain the benefit of daylight longer than otherwise. The fitting-up shops are large and airy, and contain numerous machines, of the most simple and ingenious description, and which secure, not only beauty, but economy, to the work done by them. These consist of slotting-machines, boring-machines, planing-machines, and turning-machines; and there they are to be seen working away, assiduously left to almost their own control, and turning out beautiful pieces of machinery, varying from a cylinder the size of a four-barrel, to a nut that of a lady's silver thimble.

The number of engines making at Greenock for the Caledonian Railway is 67; but, in addition to these, there are about 100 being made by engineers throughout different parts of Scotland and England. These engines are of two descriptions only—namely, for goods trains and for passenger trains; but, with the exception of this necessary division, they are alike in every other particular, the sizes of their working parts being all similar. This, we have no doubt, will be found to be a great advantage, as thereby, should any damage take place to any of the parts, they will be immediately renewed by duplicates from the store, on the name or number thereof being transmitted, either by telegraph or otherwise. The engines for the conveyance of passenger trains are of 15 in. diameter, and for goods trains of 16½ in. diameter, by 22 in. stroke. This is greater power than what is at present generally in use, but it is required in consequence of the growing demand for greater speed, and which nothing but large power can effect. These engines, it is calculated, will travel at the rate of 40 miles an hour, with ordinary trains, on the steepest incline, and will thus enable the passengers to reach London from Glasgow in something like 12 to 14 hours. The goods locomotives, which have half an inch more diameter of cylinder than those on the Edinburgh and Glasgow tunnel incline, will haul trains loaded to the extent of 800 tons, at the rate of 20 miles an hour, their power being equal to that of 120 horses, according to the pressure of steam applied.

The plan for the construction of these engines is what every person who understands such matters must approve of. There is little flummary or gewgaw work about them, and every thing seems to be of the most plain and unpretending description; but, at the same time, there appears to be no expense spared to make them of the most efficient quality. The money which is generally laid out in decorations, seems here to be devoted to good honest frame-work, solid centres, and thick tires of wheels. The engine cylinders are placed in the frames, which permit the driving-wheels to be worked by pins attached to the bushes, instead of cranks, and thus allow the action to be uniform throughout, whereby not only weight may be saved, but damage may be avoided. The tenders to these engines will be of an extra size, so as to carry large quantities of coke and water; and thus the trains will be enabled to run great distances, without requiring to stop for supplies.

We now come to the carriages, which are all to be of the most modern description, and fitted up in the most approved style. They will be larger and higher in the roof than the last, and will be fitted up with the most comfortable and convenient interior. The second-class carriages are what may be called considerable improvements on those of the present day plying on other railways. They are lined inside with plush, and have stiff-bottomed seats, and plate-glass door and side lights. Each has an inside lamp, and, with the exception of arm-decorations, and a little decoration, will be almost as comfortable as first-class carriages. The third-class carriages will be similar to those on other railways—that is to say, comfortable and secure from the weather; but they are likewise to have plate-glass windows and inside lamps. The whole of the frame-work, springs, wheels, buffers, &c., of these carriages, whether first, second, or third, are to be of one size and construction; so that the difference of the classes will lie only in the name, the slight dissimilarity of appearance, and the prestige pertaining to the fashion of the day.—North British Journal.

MANUFACTURE OF LOCOMOTIVES IN LEITH.—The progress of railway enterprise has at last brought the manufacture of locomotives to our own doors. We deem it to be a privilege, as well as a duty, as journalists, to put on record that the first locomotive manufactured in this district of Scotland made its essay on Monday last at the Leith Engine-Works, in presence of a number of influential and scientific gentlemen. The skill of the manufacturers was manifested in the complete success which attended the first trial, not only in the action and symmetry of the engine, but in the silent softness of its various movements. The manufacturers are the well-known engineers, Messrs. Hawthorn, of Newcastle, who have lately acquired the Leith Engine-Works, formerly occupied by the Messrs. Maxton. These works have been greatly improved and extended by the Messrs. Hawthorn since they became proprietors, only 10 months ago—a great part of which was required for making the necessary alterations for this particular branch of engineering; and the production of this locomotive, in a very short time thereafter, is the best test of the skill and industry of these enterprising gentlemen. The locomotive is intended for the Edinburgh and Granton Railway. On the same day, a stationary engine of 80 horse-power, of a most compact and novel construction, manufactured at the same place, for working the inclined plane through the tunnel, was tried with equal success. We rejoice at all this, both for the sake of railway progress, and of the locality to which such enterprise must bring both reputation and profit. The number of men employed, which will be further increased as the works are extended, and the benefit derived by the various manufacturers and tradesmen in the vicinity of such an establishment, must be productive of great advantage to the town and port of Leith.—Edinb. Witness.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

Society.	Address.	Day.	Hour.
Entomological	17, Old Broad-street	Monday	8 P.M.
Chemical	Society of Arts, Adelphi	Monday	8 P.M.
Medical	Bolt-court, Fleet-street	Monday	8 P.M.
Pathological	21, Regent-st.	Monday	8 P.M.
Linnæan	Soho-square	Monday	8 P.M.
Horticultural	21, Regent-street	Tuesday	8 P.M.
Society of Arts	Adelphi	Tuesday	8 P.M.
Astronomical	Somerset-house	Tuesday	8 P.M.
Botanical	20, Bedford-st., Covent-gar.	Friday	8 P.M.
Royal Botanic	Inner Circle, Regent's-park	Saturday	8 P.M.
Westminster Medical	27 A, Saville-street	Saturday	8 P.M.

ROYAL COLLEGE OF CHEMISTRY.—A numerously-attended meeting of gentlemen, supporters of this institution, was held at the rooms of the college in Hanover-square, on Wednesday evening last.—WILLIAM EWART, Esq., M.P., in the chair,—when a highly-interesting lecture was delivered by Mr. Warrington, on the history and art of calico printing, and the immediate bearings of chemistry on this important branch of manufacture. Mr. Warrington commenced by stating, that his principal design in bringing this subject before the members, was to demonstrate the bearings of the science of chemistry on one of the large manufactures of this country; and that he hoped the example would be followed by others, and thus a course of demonstration be produced, and the full value of the institution felt and acknowledged. The lecturer closed by referring to the objects of the institution, and an appeal to the teachers and students, that great exertions should be made, not only while in the college, but also when thrown on their own responsibilities. Amongst the members present were Lord Newry, Sir John Guest, Bart., M.P., Wm. Beckett, Esq., M.P., Sir James Clark, Bart., Mr. Brande, Dr. Arnott, Dr. Bevan, Dr. Charles Holland, F.R.S., Dr. Grant, George Lowe, Esq., F.R.S., A. S. Taylor, Esq., F.R.S., and R. Forrest, Esq., F.S.A.

THE SALT TRADE.—We are glad to say, that the salt trade of the borough is just now satisfactory, and that the works generally are in full operation. The recent partial success with the East India Company has emboldened the Cheshire and Worcestershire saltowners to persevere in their endeavours to procure the removal of the unrighteous thousand per cent. duty levied on all salt in our Indian dominions; and that these efforts may be crowned with success, we should think, must be the desire of every humane and considerate human being.—Worcester Chronicle.

READINGS FROM SHAKESPEARE.—At the Polytechnic Institution, on Thursday last, we had the gratification of hearing Mr. James Russell (late of Drury Lane and Covent-Garden Theatres) give one of his series of readings from Shakespeare. The subject chosen was the Merchant of Venice; but, from the short space of time allotted, he was obliged to confine himself principally to the part of Shylock. It was an entertainment well calculated for the public, having all the effect of the author, but in nowise theatrical. His mode of treatment was exceedingly ingenious; he explained the story, and gave the most effective passages of the character with impressive truth; the exhortation to mercy, was really a highly-moral effusion, and sank into the hearts of his audience, exciting feelings, which none but true reading could have done. The concluding passage—"I am content," was finely conveyed. We understand they are to be continued every Tuesday, Thursday, and Saturday.

height, requiring an enormous power of blast to force through such a heavy mass of materials. I suspect this has arisen from a mistaken notion. In passing through the furnace, the air of the blast becomes charged with carbon; and the gases, thus formed, ignite and show flame when they meet oxygen at the top of the furnace. This flame has been regarded as part of the continuous flame passing through the whole height of the furnace, and is considered a waste of heat—to apply it, the furnace has been raised. Still, flame appeared, and the next furnace raised still higher; I should say from 20 ft. to 30 ft. is high enough for any furnace. I consider the grand desideratum now required to be effected, for insuring the regular working of furnaces, is, some means of diffusing more generally and uniformly the gaseous action through the entire mass of materials above the point of fusion. When small streams of air are driven in at different points, with great pressure, it seems likely that they will form small channels wherever they meet least resistance, acting there with full effect, but leaving masses at the sides unaffected; and these masses, occasionally slipping down, cause the derangement in the working to which furnaces are so liable. If a system of working furnaces by exhaustion could be rendered practicable, it would be found most advantageous in many respects. The chief difficulty appears to be, in concentrating the heat sufficiently in the hearth of the furnace. I am inclined to think that the combination of the blast with exhaustion, and a certain modification of the form of the furnace, would be attended with advantages sufficient to repay the extra expense. By the adoption of such a plan, all the combustible gases produced in the furnace, and now generally wasted, could be used for generating steam, heating the blast, calcining the ore, or other purposes. I am aware that, in many works, these gases are used for heating the blast pipes. Another desideratum in smelting iron is, to render the action of sulphur harmless. This is one of the most general impurities of coal, and its separation is difficult; coking coal does not effect its separation. The union of sulphur and iron as pyrites—the state in which it exists in coal—may be overcome by air and moderate heat, the sulphur then burning, and the iron becoming oxidised; but it resists the action of high heats. The application of air to the upper part of a furnace would not have this effect—the heat would rise too high. The application of steam will be most effective; and I strongly recommend this to the attention of parties commencing to build furnaces for smelting iron. By diffusing steam through the materials in the upper part of the furnace—say, half-way up—sulphur will be disengaged in a harmless state, the reduction of the oxide greatly assisted, the materials kept more open, and the gaseous action rendered more general and uniform.—*SCRUTATOR, March 30.*

HYPOTHESES ON IRON.

SIR.—I perceive, in Mr. R. Mushet's letter, no reply to my facts. It is a repetition of old assertions, not only without proof, but against it; and these followed by attempts at reasoning on vapours, &c., which defy parallel for contradiction and confusion. The slight of hand by which epithets heretofore applied to ironmasters are shifted to the iron, converting it to a moral agent, guilty of its own "crude, unfinished inferiority," is a new feature. The chimera which Mr. Mushet may fight, or praise, just as he pleases, is his own; like the rest of your correspondents, he can neither confer praise, nor blame, in a matter of which he is ignorant. *MARCH 29.*

FERRUS.

BRUNTON'S ORE-DRESSING FRAMES.

SIR.—Allow me, through your valuable Journal, to ask of Mr. Brunton, if his ore-dressing frame has been tried with the improved mode adopted at Wheal Vor, St. Agnes Consols, and other mines, for dressing tin ores, within the last three years; and, if tried, what the saving in the erections, labour, &c.?—*ENQUIRER: Redruth, March 29.*

DIRECT-ACTION REVERSING WATER-WHEEL.

SIR.—In reply to the letter of "W. W. B." in your last week's Journal, I beg to inform you, that I do not put forth my reversing water-wheel as a new invention (whether it may be so or not), but as a modification of existing hydraulic machines—my object being, to introduce in the works of the Coombe Valley Quarry, as its acting manager, such machinery as may save the greatest amount of labour, with the least possible cost of construction. The capital of this company is, as every one knows who reads your useful Journal, a very limited one; and it requires great care and perseverance on my part to fulfil the pledge I have made them—viz., that the undertaking shall return a net profit of 20 per cent. on the working capital. The proprietors are mostly builders—persons who have, for a long time, felt the great inconvenience of the present existing monopoly in the slate trade; and who, also, as practical men, well know the theory of cost and produce: it is to those, therefore, that I have submitted the various plans for working their quarry; and the result of which is, I am happy to say, a perfect confidence in my views. I am in hopes of getting the quarry in working order in about six weeks; and, in the mean time, shall be happy to give every information on the subject to any person, whether in this, or any other company, who will call on me at my office. It is my intention of publishing, with your assistance, a series of papers in the *Mining Journal*, from time to time, on slate and the slate trade, illustrated by detail drawings, and founded on the experience of some years, in the building, and other constructive departments of my profession.

C. S. RICHARDSON, Surveyor and Civil Engineer.

Whitefriars-street, City.

MR. GIBBONS ON VENTILATION.

SIR.—In reference to the facts on ventilation in Staffordshire, advanced by "W." and Mr. Gibbons, and which "V." has exposed himself by affecting to disbelieve, I should like the inquiry made, if there be greater facility of ventilation in the thick than in the thin seams. As a given area of a coal, 10 yards in height, must give out five times the quantity of light air afforded by a coal which is only two, it may, perhaps, be owing to this that ventilation, though precarious, can be conducted in Staffordshire with a mere downcast and upcast, devoid of artificial aids. A comparison of the effects in different strata would ascertain the question. I am happy to hear my hasty idea of steam as an auxiliary, has been previously sanctioned by a proposer of Mr. Gurney's experience. I shall take the first opportunity of examining his plans—for "V."s" opinions on them are contradictory; nor does my letter furnish the least indication of any particular way of applying the steam. So far as I can gather from "V."s" paragraph, Mr. Gurney contemplates using steam by pressure, and not by condensation. I am surprised that a person who moves heavy bodies with such ease, should be in any difficulty how hydrogen gas floats down a current of air. It seems this river, which hurls rocks, is unable to support thistle down. That the incline carrying the current back from the extreme rise of the workings may be increased so much, that the ascensive power of the gas shall afford a great obstacle to the other current ascending to the turning point, is obvious, and, if the rise is very steep, will neutralise it; but there is then a simple remedy, which I leave to "V."s" natural ingenuity. In Mr. Gibbons's book, of which I do not believe "V." has read one word, except what he has found in the quotations, the difficulties of this description, in such a colliery as he describes, are specially provided for. The simile offered by "V." on carbonic acid gas, I comprehend, and also its absurdity. If he believes the parallel holds betwixt a mixture of fluids and the eccentricities of a tornado, let him take—atmosphere being 1,000—the specific gravity of a hay-stack, a house, an uprooted tree, a great gun, and a sentinel; if he find a difficulty, ask the aid of M. Pratière; if both are baffled, let them wend their way—the Valentine and Orson of ventilation—to the Durham College; and, if Nature still refuse "to be asked questions," a little of that study of pneumatics recommended to "F. B." may enable them to identify houses, guns, sentinels, and hay-stacks, with the superficial particles of fluids, pressing equally in every direction. "V." perhaps, is already aware the air we breathe is a mixture of fluids of two specific gravities.

On the 27th of February, I indicated the absurdity, or unfairness, of supposing air, which entered a mine at 60°, would pass through it of the same temperature as if it entered at 40°. Since then, "V." has raised the summer heat to 100°, which is very hot indeed; and "F. B." justly shows that a chimney exposed to that temperature would, instead of containing air at 62°, become a powerful auxiliary. Against this, "V." advances an extraordinary notion, that solid substances absorb less heat than air. Let "V." next summer, while he fans one cheek with a cool zephyr, at the temperature of 100°, apply the other to the brickwork of the chimney heated by the rays of the same sun, and acquaint us if he can face that argument? "V." has put a question respecting gas in "X."s" mine, which he would have avoided had he attentively read that letter. I congratulate "V." on his domestic comforts in keeping the door clear, and providing a channel of ingress and egress through the chimney for himself, his provisions, and friends; but this letter of the alphabet has announced its intention of departing from us. I, at one time, thought "V." was Fluelen him-

self, from the strong evidence by which he identified "W." and Mr. Gibbons, but it was not so; and, at last, "V." has been resolved into the initial of a vanishing quantity.—*DAVID MUSHET, Jun.: Gloucester, March 30.*

DR. CLANNY'S IMPROVED SAFETY LAMP.

SIR.—Agreeable to promise, I send you as correct a list (as I can obtain from different quarters) of the collieries in which my improved safety lamps have been called into use; I give the names as they stand upon my list, without referring to counties:—Willington, Walker, Wall's End, Sedgill, Gosforth, Coxlodge, Heaton, Patricroft, Monkwearmouth, Thornley, Wingate, Belmont, Jarro, South Penrith, Pelton, Oxclose, Rhymney, Mostyn, Coalbrookdale, Risca, Broadfield, Newcastle-under-Lyme, South Moor Colliery, Shield Row, Holmside, Crayhead, and Barnhope—in all 27 collieries. One manufacturer of my safety lamps, informed me that to order he had sent 24 safety lamps to London; and another manufacturer, that he had executed eight dozen of my safety lamps for different parts of the kingdom. I expect ere long from the manufacturers correct information as to the extensive use of my improved safety lamps, to give additional numbers, and of which I promise you as early an account as I can obtain. *Sunderland, March 29.*

W. REID CLANNY.

IMPROVEMENTS IN WORKING COLLIERIES.

SIR.—Amongst the many causes deteriorating the air in mines, is smoke—smoke from oil lamps, and smoke from gunpowder; and I am convinced much relief would be given to many mines if the smoke from these two sources could be stopped. I had a lamp put into my hand the other day for burning tallow, which gives very little smoke, instead of oil, and which has done a great deal of good in the collieries about Edinburgh; it is the invention of an intelligent "overman" in the Marquis of Lothian's collieries, near Edinburgh, whose name I do not know. Gun-cotton, which is said to give no smoke, could be substituted for gunpowder—and thus much smoke, which is so hurtful to air, might be got rid of. Could you, or any of your correspondents, inform me where, and at what rate, gun-cotton is to be had?—*R. M.: Glasgow, March 30.*

VENTILATION OF COLLIERIES.

SIR.—Although so much has appeared in your valuable columns, under the above head, from "V.", "W.", "F. B.", T. Deakin, &c., &c., I hope I may be allowed to say a few words. I believe yourself, and many of your readers, will agree with me, that if these correspondents would cavil less, and stick more to the subject they would wish to benefit, it would be better. The efficient and safe ventilation of a colliery, however fiery it may be, can be effected by carrying out the following simple plan, which I will endeavour briefly to describe. I will suppose a piece of coal required to be worked—say a mile by three-quarters of a mile—the following rough sketch may render my description more clear:—



Let A be the supposed site for the working pit, or shaft; I would have only one pit for winding the coal, not two, as is the general practice, on the most suitable point, near the centre of the piece of coal, but at the very extreme rise. I would sink another shaft B, 1 ft. in diameter, larger than the working shaft A: to the dip of B and A considerably, I would sink another shaft C, of the same dimensions as the shaft A, and so situated in the piece of coal, that when the coal is got around the shaft A, and the hauling becomes expensive, the shaft C may be used as the winding shaft. On the top of shaft B, I would build a chimney 40 ft. high, the same in diameter as the shaft; and at the bottom of shaft B, have a well-constructed furnace always kept at work. Get a well-constructed air-road, not less in area mind than the downcast shaft C, carried from this downcast shaft C, through all the workings of the colliery, to the bottom of the upcast shaft B; carry the air in a body, do not split it. Carry the air-roads at the top of the coal, or as near the top of it as practicable, taking care that the air-road is fully in area equal to the downcast shaft C; never let it be throttled, more mischief arises from this than is imagined.

You will see that the working shaft has nothing to do with the ventilation—I condemn this universal practice, in toto. If these ill-described plans are carried out—I care not how fiery the colliery—I fearlessly assert, that we shall have no more sad tales of hundreds of our poor colliers being hurried so fearfully to their last account. Many will say that my plan is too expensive—I grant it may be more expensive than most of the slovenly plans adopted, but then it will be effective; and I think all your readers will agree, that no man has a right to work a colliery, who, to save his gold, will knowingly risk the life of his fellow-man. I have not time to write more on this subject now; and, in conclusion, beg the opinion of Mr. Deakin, and other practical miners, upon what I have stated. I claim no originality—nothing new or wonderful—but I beg attention, from those capable of giving an opinion, to what I have, perhaps, imperfectly described. *MARCH 31.*

ALPHA.

THE DRAINAGE OF COAL SEAMS.

SIR.—The remarks of "V." on the disengagement of gas in opening new collieries, recalls the views of Mr. Ryan, who I believe first explained fully the theory of these and other facts in mines. There is no question, had Mr. Ryan been a coalowner, he would have effected much good; but he had the discouraging task of engraving acute and refined views upon the wild stocks of practised prejudice—a disadvantage which nips the buds of an expansive mind, and blights the quality of its fruit. As confirmation of his opinions on the effect of faults in detaining the products of fermentation, and enriching the quality of the coal, it is to be remarked that, in the small coal-field of the Forest of Dean, where there are no dykes or dislocations to impede the continuity of the strata, the mines have no inflammable air, which appears entirely drained off, according to his theory, and the coal correspondingly of a poor quality, compared to the produce of districts where faults abound.—*D. MUSHET, Jun.: Gloucester, March 29.*

VENTILATION OF MINES.

SIR.—In my last letter, I mentioned two facts in the ventilation of my colliery, and in answer to "V."—I depend on fire in the 30 fathom and 15 ft. pits in hot dry weather, as the ventilation will not move without it; but I would call his attention, also "W." of Dudley, and particularly Mr. Gibbons's, to the following extract of a work published by Dr. Ure, in 1839, giving a short description of coal mines; and, speaking of the large collieries at Newcastle, he says:—"Here the circulation is made active, by rarefying the air at the upcast shaft by means of a very large furnace, placed either at the bottom or top of the shaft—the former position is generally preferred; when it surmounts a single pit, or a single division of the pit, the compartment is made air-tight at top, by placing strong buntons or beams across at a suitable distance from the mouth; on these buntons a close scaffolding of plank is laid, well plastered or coated over with adhesive clay. A little way below the scaffold a passage is previously cut either in a sloping direction, to connect the current of air with the furnace; if any obstacle prevent the scaffold from being erected within the pit, this can be made air-tight at top, and a brick flue carried thence along the surface to the furnace; the furnace has a size proportioned to the magnitude of the ventilation, and the chimneys are either round or square, being from 50 to 100 ft. high, with an inside diameter of from 5 to 9 ft., tapering upwards to a diameter of from 2½ ft. to 5 ft.; such stalks are made 9 in. thick in the body of the building, at bottom they are lined with fire-bricks. The plan of placing the furnace at the bottom of the pit, is, however, more advantageous; because the shaft through which the air ascends to the furnace at the pit mouth, is always at the ordinary temperature—so that, whenever the top furnace is neglected, the circulation of the air becomes languid and dangerous to the workmen; whereas, when the furnace is situated at the bottom of the shaft, its sides get heated, like those of a chimney, through its total length—so that, though the heat of the furnace be accidentally allowed to decline, or become extinct for a little time, the circulation will still go on, the air in the upcast pit being rarefied by the heat remaining in the sides of the shaft." Your readers will also find the air chimney, with furnace either at top or bottom, described in the *Edinburgh Encyclopedia*, published in 1820. As I have stated, Mr. Gibbons is right, in putting on a chimney on the upcast; for every means should be used to make the air take its natural course to there; if the current does so invariably without a chimney, I agree with "V." so far, in thinking it of very little additional service—for without a furnace in the bottom, I very much doubt of its safety alone. From the above extract, Mr. Gibbons must cut a sorry figure before your readers, in making claim to this method of ventilating mines; and your readers will also doubt if Mr. Moss

Taylor is going to be the "intelligent and indefatigable surveyor," to lead us through this Red Sea, as it was his place to have let Mr. G. know what had been before done by others. I regret much that Mr. T. Deakin has not put to the test his way of it—viz., a fire at the bottom and top of shaft—and given the result; we have not forgot his notable method of purifying the atmosphere, laid before your readers some time ago. I hope Dr. Murray will continue his interesting geological papers—these are worthy of him; but to push forward hurried thoughts or remarks on ventilation, suggested by some imperfect opinion, without the practical trial of it, cannot increase his authority in these matters; to both these gentlemen, I would recommend the adage—"Ego nec stadium sine divite vena, nec rude quid proposit ingenium."—*X.: Carlisle, March 29.*

VENTILATION OF MINES.

SIR.—I have looked on in silence for months past, expecting that some of your talented correspondents, who have all the appearance of being burning and shining lights, would, ere this time, have laid before the coal-owners and the public some tangible scheme of ventilation, or improved method, bearing the stamp of originality, for working our coal mines; but I have hitherto looked in vain. The object of one class of your correspondents seems to be, to labour to establish learned theories, and that of the other class to uproot and destroy them. Thus, between argument and refutation, the writers have apparently lost sight of their philanthropic object; and, while this war of words is going on, carburetted hydrogen gas is moving down its victims, not by tens, but by fifties.

Being practically acquainted with the working of coal mines, and being anxious to improve the condition of a worthy class of men, I have, for a long time past, made the subject of ventilation, and an improved method of working coal mines, my particular study. By your permission, I will give the results to the public:—

1. I have invented a machine for working coals, by which I can work the hardest coal without the use of gunpowder, and by which I expect to banish every naked light from the mine, by enabling the miner to work with a safety lamp; I also calculate upon saving 15 or 18 out of the 20 per cent., now nearly lost in "small," by the present barbarous mode of "kicking," "nicking," &c.; and independent of the advantages to the pitman, I calculate that coal will be worked about 40 per cent. cheaper than at present. By working the coals by this machinery, the operations will be confined to a less area, the ventilating current can be more easily concentrated, and thereby rendered more effective. I have taken preliminary steps towards securing this invention by letters patent; but I wish to obtain the assistance of an influential party, connected with the coal-trade, to enable me to introduce it into the coal mines on a scale commensurate with its merits; and should the notice attract the attention of such a party, I shall be happy to treat with him or them upon equitable terms.

2. Those of your readers who have paid any attention to the cause of explosions in coal mines, which may be scantily gleaned from the evidence given before coroners' juries, and from incidental facts which occur on occasionally, must at once conclude there is something "rotten" in the system. After attentively reading and weighing everything that has come in my way, bearing on this important subject, for years past, I have, some time since, come to the conclusion, that there is but one course by which the cause can be removed—and that is, to fix and lock every light in the pit, and to allow neither man nor boy to have the least control over them, except a man or men, especially appointed for that purpose. Would the owner of a powder magazine allow a man to enter it with a naked candle, without using some other precaution than merely warning the man as to the insidious nature and destructive power of the powder? You may warn a man of danger, and caution him not to approach it; but the most effectual way to prevent him doing mischief is, to put it out of his power. It is not my intention to occupy your space by going much into detail in the mode of fixing these lights in the mines; but shall gladly afford every information in my power to any owner of collieries, who may apply to me for that purpose. The general principle which I would adopt is, to fix and lock up all the lights in frames, or posts for that purpose, in the horse-roads, &c., so as to give out the greatest amount of light to the best advantage; these lights should be inclosed in lamps or lanterns. A man, or men, should be appointed to have the entire control and management of those lamps or lanterns, and on whom the whole responsibility would rest.

It must be matter of surprise, as well as regret, that, notwithstanding the rapid progress of the arts and sciences during the last half century, the mode of working our coal mines has alone remained nearly stationary; and from what I have seen in old pits' workings, I am inclined to think that the pitmen in the last generation were actually more expert in working coal, than those of the present day, considering the limited resources they possessed in regard to steam-engines, &c. If any one doubted this fact, let him read the account of an accident recorded in your Journal of the 27th inst., which took place at the Yew-Tree Colliery, Kingswinford, where, in the year 1847, seven boys were sent down the pit early in the morning to brush out the sulphur! Let this be written as with a sunbeam. Need explosions of fire-damp excite surprise after this? Surely, Mr. Editor, this is an unmistakable sign of rottenness in the system. In what light are we to consider the melancholy accident recorded last week, by explosion of fire-damp, in one of Mr. B. Gibbons's pits? It would be too much to say, without a full knowledge of the facts of the case, that that accident is to be considered conclusive evidence against his system, but it certainly has a tendency to throw doubt upon it. We cannot blink the fact, that since the introduction of safety lamps into our coal mines, the loss of life by explosion of fire-damp has been fearfully on the increase—but I am persuaded, that, if a system of fixing up the lights, and locking them from the men, had been adopted 20 years ago, some hundreds of valuable lives might have been saved, and consequent misery and distress prevented, independent of the vast sums of money these accidents cost the coalowners. Should any of the coalowners entertain the idea of testing my system of fixing the lights, &c., and still have doubts about the matter, I would advise a few of them—say, six or eight—to form themselves into a kind of club, or society, and each man contribute a small sum of money to a general fund, with which to try my system experimentally, by first having only one of their collieries fitted up, in that way; then, they might, for little expense, put it to a practical test; and, in the event of its turning out well (of which I have no doubt), each owner could have his colliery fitted up in rotation. I have little doubt but several collieries might be fitted with fixed lights, and so placed in comparative safety, for less money than one explosion would cost, not to speak of the loss of life, &c. Now, Mr. Editor, I have not only struck out a new path, but, I consider, a safe one too; and also an easy and inexpensive method of putting it to a practical test, which I trust some of the coalowners will show their superior sense in adopting; and should any of them require my assistance in carrying out these plans, I shall do all in my power to meet their wishes. *Bensham, Gateshead, Tyne, March 30.*

WILLIAM STORREY.

MINE SURVEYING—ERRATUM.

SIR.—In my letter, inserted in your Journal of the 27th inst., there is an error, which I should feel obliged by your correcting:—"90 yards" should be "60 yards."—*INVESTIGATOR: St. Agnes, near Truro, March 30.*

ELASTIC ATMOSPHERIC TUBES.

SIR.—With reference to the complimentary paragraph in your paper of Saturday last, I beg to say, that I was not unaware of the fact of various methods being tried, to discover a practical resilient tube for railways. My claim, however, is to the brass wires, or rods, as a strengthening for elastic tubes. The double-elastic tube, sent you since the other (noticed in another column), I claim as a new invention. A crudity it may be—but if you will condescend to publish it, something better may come out of it, especially as we are yet but in a transition state, with respect to railway construction. You speak of "expense;" that argument would have equally applied to the first railway. With all due deference to yourself, Mr. Editor, I may be allowed to mention, that there are modes of reducing the wear and tear of even two or three passages per day—but which, I am rather inclined to think, would not, after all, be so great with a double pipe, and the slit on each side—so that no deposits from the carriages of coal, or dust, could well rest in the slits—by the sides of which, small circular tubes might hang, if desired; or lips might be used, as already suggested by another, for a single tube. An objection may arise as to a defect in any part of the opposite tube, weakening the force of the atmospheric column in that particular place; and then there is the advantage of the guide-wheels to obviate the objections to the flange, as shown in your Journal some time since; an engineer, of Plymouth Dockyard, pronouncing the mathematical defects, as pointed out by me, to be unanswerable. I observe an able letter on the flange in your Journal of Saturday week. *Penzance, March 29.*

ALFRED T. J. MARTIN.

